

A- REQUEST

ECR : —

ECO : 6

Nature of proposed change :	Add 3rd U clip as a safety measure to new enlarged pod for BP44.
Reason :	In case the pod gets stuck from the rear, to prevent it from damage.
Submitted By :	Lucien Barbeau from Command Jon ChusStopae
Date :	20/0.03.30

B- IMPACT ANALYSIS

Product Manager	I agree with suggestion. Signature : D. Barbeau /date : 20/0.03.30
Operation Manager	ok - I will update stocks + provide to current customers Signature : D. Barbeau /date : 20/0.03.30
Quality System Manager	ok / No change Signature : D. Barbeau /date : 20/0.03.30
Regulatory affairs Manager	ok / No change Signature : D. Barbeau /date : 20/0.03.30
Supplier A	— Signature : /date :
Supplier B	— Signature : /date :
Other	— Signature : /date :

Helitowcart - DESIGN CHANGE REQUEST-ORDER (ECR/ECO)	F20-01	Page 2 of 3
Reviewed & approved by: /		2006 09 09

C- DECISION

Risk analysis	<p>3rd U-clip.</p> <p>This device is designed to actually reduce risks of pad catching up on irregular terrain</p> <p>So, OK.</p> <p>Signature: <u>D. Barlan</u> /date: <u>2010.03.30</u></p>
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Decision	<p>Go ahead</p> <p>Signature: <u>D. Barlan</u> /date: <u>2010.03.30</u></p>
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D- ACTION PLAN

Action	Resp	Due date :	Verified by :
1) Submit prepared change to Hisko Zgela	DB	2010.03.30	DB
2) Get prototype made	DB/LB	2010.03.10	DB
3) Test prototype & validate with specialist	DB/LB	2010.03.10	DB
4) Submit doc. to Hisko Zgela for change	DB/DB	2010.03.30	DB
5) Obtain change doc & Review	DB/MT	2010.04.15	DB
6) Get new batch of Low Uclips made	DB	2010.04.20	DB
7) Prepare update kits - Justrack - for parts already in field	DB	2010.05.01	DB
Effective date :	Effective lot no :		

8) Update DMR & DHR	DB	2010.05.01	DB
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Helitowcart - DESIGN CHANGE REQUEST-ORDER (ECR/ECO)	F20-01	Page 3 of 3
Reviewed & approved by: /		2006 09 09

E- VERIFICATION

Verified Elements :	By/ date :
I verified parts & assembled kits the new low U-Clip meets the plan as proposed plan.	DB 20.05.03

F- V ALIDATION

Validated Elements :	By/ date :
Change was submitted to Timoteo and he confirmed that change is safe and actually can improve safety if food gets caught on ground.	DB 20.05.03

G- CLOSURE

I confirm that the designated change has been performed successfully :
Signature : D. Balan /date : 20.05.03

Traceability data

Qty	Part No.	Desc:	Lot number
19 PAIRS	112 000/ 00D	BP44 STREAMLINE BEARPAW ASS'Y	HTC-LNF- 091210-01 HTC-LNF-yymmdd-seq
Includes:			
	See attached excel chart for detailed list of components + lot numbers DB		LN-
			LN-
			LN-
			LN-
			LN-
			LN-
			LN-

Inspection Plan

Aspect	Sampling	Inspection	Acceptance parameters
A	100 %	PRESENCE OF ICEBLADES & FILER BLOCK.	
B	100 %	PRESENCE OF DOCUMENTS	
C	100 %	ALL LN FOR BATCH MATCH USED PARTS	
D	100 %	ALL COMPONENTS PRESENT & IN CORRECT QTY	
E	100 %	BOX APPROPRIATELY IDENTIFIED	
Inspection Plan approved by:			Date:

Inspection Records

Ok = T+initials

Date:	Quantity	A	B	C	D	E	Notes
2009 12 10	19 PAIRS	OK MB	OK MB	OK MB	OK MB	OK MB	
2010 05 03	19 PAIRS	ADDED REAR LOW U-CLIP ON ALL PAIRS SEE ATTACHED RECORDS AS PER ECO #60/SENT KIT TO CUSTOMERS WHERE APPLICABLE.					

Release certificates issue

Release Certificates issued: <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	By: J. Barban	Date: 09 12 10
Comments:		
• RELEASE CERTIF. NOS: HTC-RL-091210-01 TO 19 • 2010 0503 / REL. CERTIF VERSION "b" ISSUED FOR UNIT NO 01, 02, 03, 04, 06 THAT WERE ALREADY ON TERRAIN. SENT WITH OPTIONAL 3RD U-CLIP FOR REAR KIT. / DB / SEE ECO #6.		

HTC-RC-091210-xx(b)																																					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	HTC-LNF-091210-01	Qté par paire	Nb paires req	Qté totale pièces	Lot 1	Qty	Info	Lot2	Qty	Info	Lot3	Qty tot							
Rear filler block assy																			Bp pads STREAMLINE	314 0001 01 B	2	19	38	LN-091209-01	38												38
																			Filler block REAR	314-0022-01 A	2	19	38	LN-091209-02	38												38
																			Bolts AN4-13A	261 0004 17 A	4	19	76	LN 66213/37961 4500089804	76												76
																			Nuts	262 0001 17 A	4	19	76	API/4500068971 / L/N68222/716444	76												76
																			Washers	263 0001 17 A	8	19	152	NAS1149F0463P/L/N 71070/U2947	152												152
Iceblade Assy:																			Iceblade assy	314 0002 15 A	4	19	76	L/N 090603-01	76											76	
																			Nuts	262 0001 17 A	8	19	152	API/4500068971 / L/N68222/716444	152											152	
																			Washers	263 0001 17 A	8	19	152	NAS1149F0463P/L/N 71070/U2947	152												152
Bags with parts for customer assy of Front U-Clips:																			U-Shaped Clips	314 0006 15 B	4	19	76	L/N-081202	76											76	
																			Slotted clip Supports	314 0007 15 B	8	19	152	L/N081201-06 / Batch 5	152												152
																			Bolts AN4-16A	261 0003 17 A	4	19	76	API 4500006984 /L/N 58052/31582	48	API45000068519 / L/N66410/6472	28								76		
																			Bolts AN4-15A	261 0002 17 A	4	19	76	L/N10357// M&m //4500033156	76											76	
																			Nuts	262 0001 17 A	8	19	152	API/4500068971 / L/N68222/716444	148	API 68222/71644 -MS2144N4/45000	4								152		
																			Washers	263 0001 17 A	16	19	304	NAS1149F0463P/L/N 71070/U2947	160	NAS1149F0463P Lot71070/U2947	144									304	
																			Filler blocks 1/4"	314 0012 02 A	4	19	76	L/N091208-01	76											76	
																			Filler blocks 1/8"	314 0015 01 A	4	19	76	L/N090219-01	76											76	
																			Filler blocks 3/32"	314 0014 01 A	4	19	76	L/N090219-02	76											76	
Bags with parts for customer assy of LOW REAR U-Clips:																			LOW U-Shaped Clips	314 0023 15 A	2	19	38	LN-100430-01	38											38	
																			Bolts AN4-15A	261 0002 17 A	4	19	76	L/N10357// M&m //4500033156	76											76	
																			Slotted clip Supports	314 0007 15 B	4	19	76	L/N100315-01 / Batch 6	152											152	
																			Washers	263 0001 17 A	8	19	152	Airc.Spruce Can L/N40-15318 / P/Nar	152											152	
Bags with Extra Filler Blocks & Washers																			Filler blocks 1/8"	314 0015 01 A		19	100	L/N090219-01												100	
																			Filler blocks 3/32"	314 0014 01 A		19	128	L/N090219-02												128	
																			Washers	263 0001 17 A	8	19	152	Airc.Spruce Can L/N40-15318 / P/Nar	152											152	

D.B. 2010-05-03

Action plan for Addition of 3rd U-Clip

Lot: 091210-01

Qty: 19 pairs

Boxes in Stock	Boxes in Stock - ISOLATED	Kits already delivered to customers
Qty: 12	Qty: 2	Qty: 5 pairs
Traceability number: <div> <div>✓</div>091210-07 <div>✓</div>091210-08 <div>✓</div>091210-09 <div>✓</div>091210-10 <div>✓</div>091210-11 <div>✓</div>091210-12 <div>✓</div>091210-13 <div>✓</div>091210-14 <div>✓</div>091210-15 <div>✓</div>091210-16 <div>✓</div>091210-17 <div>✓</div>091210-18 </div>	<div> <div>✓</div>091210-05 /Used for Tests <div>✓</div>091210-19 / Used for Show </div>	<div> <div>✓</div>091210-01 / F3185a Air Capitale <div>✓</div>091210-02 / F3253 Capitale Helipro <div>✓</div>091210-03/ F3253 Capitale Helipro <div>✓</div>091210-04/ F3253 Capitale Helipro <div>✓</div>091210-06/ F3404 Capital Heli Yukon </div>
Parts Kits: <div> <div>✓</div>4x Bolts 15A <div>✓</div>4x Slotted Clip Support <div>✓</div>8x Washers <div>✓</div>2x Low U-Shaped Clips <div>✓</div>1x New MDL <div>✓</div>1x New INST 314... </div>	<div> <div>✓</div>4x Bolts 15A <div>✓</div>4x Slotted Clip Support <div>✓</div>8x Washers <div>✓</div>2x Low U-Shaped Clips <div>✓</div>1x New MDL <div>✓</div>1x New INST 314... </div>	<div> <div>✓</div>4x Bolts 15A <div>✓</div>4x Slotted Clip Support <div>✓</div>8x Washers <div>✓</div>2x Low U-Shaped Clips <div>✓</div>1x New MDL <div>✓</div>1x New INST 314... </div> <div>+</div> <div> <div>✓</div>1x Introduction Letter <div>✓</div>1x Release Certificate <div>✓</div>1x Copy of applicable invoice <div>✓</div>1x New MDL <div>✓</div>1x New INST 314... </div>
<div> <div>✓</div>+ Spare Filler blocks & Washers <div>✓</div>8x Washers <div>✓</div>4x 1/8" Filler block <div>✓</div>8x 3/32" filler block </div>	<div> <div>✓</div>+ Spare Filler blocks & Washers <div>✓</div>8x Washers <div>✓</div>4x 1/8" Filler block <div>✓</div>8x 3/32" filler block </div>	<div> <div>✓</div>+ Spare Filler blocks & Washers <div>✓</div>8x Washers <div>✓</div>8x 1/8" Filler block <div>✓</div>4x 3/32" filler block </div>

EXTRA FILLER BLOCKS & WASHERS

ECO Record	DHR	DMR
<p>Complete ECO form</p> <p>Add this action plan to record</p>	<p>Create receiving inspection form for New Low U shaped clip</p> <p>Create additional page for final lot, with all info regarding this addition</p> <p>Create Additional Release certificates for the kits to send to customers in field</p>	<p>Update Paper DMR</p> <p>Update Electronic DMR</p>

By:

Date:

N. Barla

2010.05.03

May 5th, 2010

Object: BearPaws BP44 - Offer of Rear 3rd U-Clips.

To whom concerned,

Following our issue of our Larger Pad Streamlined BearPaws for the R44, a customer suggested that we benefit from the existing holes made for the support filler block to add a 3rd U-Clip at rear for easy additional safety.

We thought the idea brilliant and have decided to proceed with an engineering change to allow users to add it to their bearpaws.

We also decided to offer the benefits from this initiative to our customers already in possession of these products. This is why this package includes a parts kit, an updated Master Document List, an updated Assembly Instruction and a Release certificate for this kit.

Rest assured that your bearpaws as they have been installed with two U-clips are still very safe. The design had been approved by a Transport Canada Approved Aeronautics Engineer for a larger pad with two U-clips. So the pads may be left as is if you prefer so.

Should you require further information, do not hesitate to contact us.

We hope you enjoy your Helitowcart BearPaws!

Kind Regards,

Nathalie Barbeau,
VP Commercial Affairs & Quality Management Director
Helitowcart

En stock:

• ajouter au sac de boudins, tous les morceaux suivants :

• remplacer le document

▲ HDL... "Master Doc. list" Rev. B
par celui Rev. C

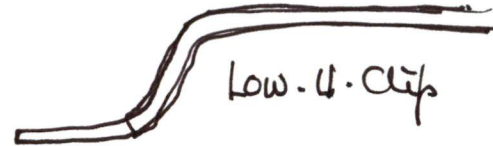
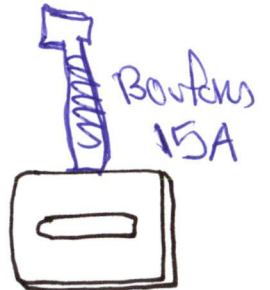
et

▲ l'installation d'installation
314-0011-00A Rev C
par celui Rev D

Ote:
4
4

8

2



194ifs

déjà vendus

• faire enveloppes avec ceci, aux clients suivants.



+



Batch HTC-RC-091210-xx

F3185a x 1
F3253 x 3
F3404 x 1

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Annex A (BearPaw Assembly Drawing)	
Annex B (BearPaw Pad Drawing)	



Quantité	Description	Devise \$CAN	
		Prix unitaire	Montant
1	BP44 Bear paws Streamlined Produits faits au Canada		\$0.00
Merci!		Sous total	\$0.00
		Expédition	\$0.00
		TPS	\$0.00
		TVQ	\$0.00
		Total	\$0.00

IN REFERENCE TO:



Packing Slip

Date: March 11, 2010

Ref: 3404

Bill to: Capital Helicopters (1995) inc
3-25 Pilgrim Place
Whitehorse, Yukon Territory
Canada, Y1A 6E6

Ship to: Madonna Helicopters
RR 2
Airdrie, Alberta
Canada, T4B 1A4

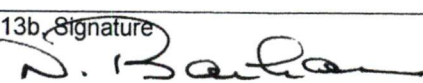
Contact: Mr Delmar Washington
Tel: 867 668 6200
fax:
cell:
email: capitalheli@northwestel.net

Contact: Roger Hogan
Tel: 403 948 0968
Fax: 403 948 4338
email: rhogan@madheli.com
email: roger.hogan@madheli.com

NAFTA 120493044	Terms Visa	Issued by: Helitowcart 877A Alphonse-Desrochers St-Nicolas, Levis, Qc, Canada, G7A 5K6 info@helitowcart.com tel. +1 418 561 4512 www.helitowcart.com fax. +1 418 836 4575	Weight 7lbs	Dimension 16.5"x13"x3.25"
Bond 990458243	Order verbal		Shipping Dicom	Due Date March 16th, 2010
Broker	Agent Lucien Barbeau			
Quantity	Description		Currency	Can\$
			Unit price	Total
1	BP44 BearPaws			
<p style="text-align: center;"><i>Products Made in Canada Thank you!</i></p>				
Notes:			Sub Total Shipping GST PST Total	




Quantité	Description	Devise	\$CAN
		Prix unitaire	Montant
3	BP44 Bear paws (1 paire)		
Merci!			
		Sous total	\$0.00
		Expédition	\$0.00
		TPS	\$0.00
		TVQ	\$0.00
		Total	\$0.00

1. Approving National Aviation Authority / Country Transport Canada			2. Authorized Release Certificate Form One		3. Form Tracking No. HTC-RC091210-01b
4. Approved Organization Name & Address: Helitowcart (Vanair inc.) 860, St-Nicolas, Levis, Quebec, Canada G7A 5K6			5. Work Order/Contract/Invoice Invoice 3185a Lucien Barbeau, Air Capitale, Québec.		
6. Item	7. Description	8. Part no.	9. Qty	10. Serial / Lot no.	11. Status / work
1	Helitowcart - BP44 BearPaw	HTC-MDL-BP-44-1000 112-0001-00	2	HTC-LNF-091210-01	New
2	Low Rear U-Clip	314-0023-15-A	2	LN-100430-01	New
3	Bolts AN4-15A	261-0002-17-A	4	L/N 10357	New
4	Slotted Clip Supports	314-0007-15-B	4	L/N100315-01	New
5	Washers	263-0001-17-A	8	L/N40-15318	New
12. Remarks Canada: Transport Canada Approved manufacturer no 27-06, Transport Canada STC no. SH06-24 United States: FAA STC no. SR02432NY					
13a. Certifies that the items identified above were manufactured in conformity to:		<input checked="" type="radio"/> Approved design data and are in condition for safe operation <input type="radio"/> Non approved design data specified in block 12.		 14a. Certifies that unless otherwise specified in block 12, the work identified in block 11 and described in block 12 has been performed in compliance with the Canadian Aviation Regulations <input type="radio"/> CAR 571.10 Maintenance release. <input type="radio"/> Other regulation specified in block 12. 	
13b. Signature 		13c. Approved Organization. Number Inspector no: 001 / STC no SH06-24 Approved manufacturer no 27-06		14b. Signature	
13d. Name Nathalie Barbeau, Quality Manager		13e. Date (dd/mm/yyyy) 03/05/2010		14c. Approved Organization Number	
				14d. Name	
				14e. Date (dd/mm/yyyy)	

Ref: Transport Canada: Form One

- 1- This document does not constitute authority to install the part.
- 2- Installers working in accordance with the national regulations of a country other than that specified in block 1 must ensure that their regulations recognize certifications from the country specified.
- 3- Statements 13a & 14a do not constitute installation certification. In all cases the technical record for the aircraft must contain an installation certification issued in accordance with the applicable national regulations before the aircraft may be flown


Authorized Release Certificate

1. Approving National Aviation Authority / Country Transport Canada			2. Authorized Release Certificate Form One		3. Form Tracking No. HTC-RC091210-02b
4. Approved Organization Name & Address: Helitowcart (Vanair inc.) 860, St-Nicolas, Levis, Quebec, Canada G7A 5K6			5. Work Order/Contract/Invoice Invoice 3253 Dany Ricard, Capitale Helipro Service, Québec.		
6. Item	7. Description	8. Part no.	9. Qty	10. Serial / Lot no.	11. Status / work
1	Helitowcart - BP44 BearPaw	HTC-MDL-BP-44-1000 112-0001-00	2	HTC-LNF-091210-01	New
2	Low Rear U-Clip	314-0023-15-A	2	LN-100430-01	New
3	Bolts AN4-15A	261-0002-17-A	4	L/N 10357	New
4	Slotted Clip Supports	314-0007-15-B	4	L/N100315-01	New
5	Washers	263-0001-17-A	8	L/N40-15318	New
12. Remarks Canada: Transport Canada Approved manufacturer no 27-06, Transport Canada STC no. SH06-24 United States: FAA STC no. SR02432NY					
13a. Certifies that the items identified above were manufactured in conformity to:		<input checked="" type="radio"/> Approved design data and are in condition for safe operation <input type="radio"/> Non approved design data specified in block 12.		14a. Certifies that unless otherwise specified in block 12, the work identified in block 11 and described in block 12 has been performed in compliance with the Canadian Aviation Regulations <input type="radio"/> CAR 571.10 Maintenance release. <input type="radio"/> Other regulation specified in block 12.	
13b. Signature 		13c. Approved Organization. Number Inspector no: 001 / STC no SH06-24 Approved manufacturer no 27-06		14b. Signature	
13d. Name Nathalie Barbeau, Quality Manager		13e. Date (dd/mm/yyyy) 04/01/2010		14c. Approved Organization Number	
				14d. Name	
				14e. Date (dd/mm/yyyy)	

Ref: Transport Canada: Form One

- 1- This document does not constitute authority to install the part.
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- 3- Statements 13a & 14a do not constitute installation certification. In all cases the technical record for the aircraft must contain an installation certification issued in accordance with the applicable national regulations before the aircraft may be flown


Authorized Release Certificate

1. Approving National Aviation Authority / Country Transport Canada			2. Authorized Release Certificate Form One		3. Form Tracking No. HTC-RC091210-03b
4. Approved Organization Name & Address: Helitowcart (Vanair inc.) 860, St-Nicolas, Levis, Quebec, Canada G7A 5K6			5. Work Order/Contract/Invoice Invoice 3253 Dany Ricard, Capitale Helipro Service, Québec.		
6. Item	7. Description	8. Part no.	9. Qty	10. Serial / Lot no.	11. Status / work
1	Helitowcart - BP44 BearPaw	HTC-MDL-BP-44-1000 112-0001-00	2	HTC-LNF-091210-01	New
2	Low Rear U-Clip	314-0023-15-A	2	LN-100430-01	New
3	Bolts AN4-15A	261-0002-17-A	4	L/N 10357	New
4	Slotted Clip Supports	314-0007-15-B	4	L/N100315-01	New
5	Washers	263-0001-17-A	8	L/N40-15318	New
12. Remarks Canada: Transport Canada Approved manufacturer no 27-06, Transport Canada STC no. SH06-24 United States: FAA STC no. SR02432NY					
13a. Certifies that the items identified above were manufactured in conformity to:		<input checked="" type="radio"/> Approved design data and are in condition for safe operation <input type="radio"/> Non approved design data specified in block 12.		14a. Certifies that unless otherwise specified in block 12, the work identified in block 11 and described in block 12 has been performed in compliance with the Canadian Aviation Regulations <input type="radio"/> CAR 571.10 Maintenance release. <input type="radio"/> Other regulation specified in block 12.	
13b. Signature 		13c. Approved Organization. Number Inspector no: 001 / STC no SH06-24 Approved manufacturer no 27-06		14b. Signature	
13d. Name Nathalie Barbeau, Quality Manager		13e. Date (dd/mm/yyyy) 04/01/2010		14c. Approved Organization Number	
				14d. Name	
				14e. Date (dd/mm/yyyy)	

Ref: Transport Canada: Form One

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- 3- Statements 13a & 14a do not constitute installation certification. In all cases the technical record for the aircraft must contain an installation certification issued in accordance with the applicable national regulations before the aircraft may be flown


Authorized Release Certificate

1. Approving National Aviation Authority / Country Transport Canada			2. Authorized Release Certificate Form One		3. Form Tracking No. HTC-RC091210-04b
4. Approved Organization Name & Address: Helitowcart (Vanair inc.) 860, St-Nicolas, Levis, Quebec, Canada G7A 5K6			5. Work Order/Contract/Invoice Invoice 3253 Dany Ricard, Capitale Helipro Service, Québec.		
6. Item	7. Description	8. Part no.	9. Qty	10. Serial / Lot no.	11. Status / work
1	Helitowcart - BP44 BearPaw	HTC-MDL-BP-44-1000 112-0001-00	2	HTC-LNF-091210-01	New
2	Low Rear U-Clip	314-0023-15-A	2	LN-100430-01	New
3	Bolts AN4-15A	261-0002-17-A	4	L/N 10357	New
4	Slotted Clip Supports	314-0007-15-B	4	L/N100315-01	New
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12. Remarks Canada: Transport Canada Approved manufacturer no 27-06, Transport Canada STC no. SH06-24 United States: FAA STC no. SR02432NY					
13a. Certifies that the items identified above were manufactured in conformity to:		<input checked="" type="radio"/> Approved design data and are in condition for safe operation <input type="radio"/> Non approved design data specified in block 12.		14a. Certifies that unless otherwise specified in block 12, the work identified in block 11 and described in block 12 has been performed in compliance with the Canadian Aviation Regulations <input type="radio"/> CAR 571.10 Maintenance release. <input type="radio"/> Other regulation specified in block 12.	
13b. Signature 		13c. Approved Organization. Number Inspector no: 001 / STC no SH06-24 Approved manufacturer no 27-06		14b. Signature	
13d. Name Nathalie Barbeau, Quality Manager		13e. Date (dd/mm/yyyy) 04/01/2010		14c. Approved Organization Number	
				14d. Name	
				14e. Date (dd/mm/yyyy)	

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Authorized Release Certificate

1. Approving National Aviation Authority / Country Transport Canada			2. Authorized Release Certificate Form One		3. Form Tracking No. HTC-RC091210-06b
4. Approved Organization Name & Address: Helitowcart (Vanair inc.) 860, St-Nicolas, Levis, Quebec, Canada G7A 5K6			5. Work Order/Contract/Invoice Invoice 3404 Delmar Washington, Capital Helicopters, Yukon.		
6. Item	7. Description	8. Part no.	9. Qty	10. Serial / Lot no.	11. Status / work
1	Helitowcart - BP44 BearPaw	HTC-MDL-BP-44-1000 112-0001-00	2	HTC-LNF-091210-01	New
2	Low Rear U-Clip	314-0023-15-A	2	LN-100430-01	New
3	Bolts AN4-15A	261-0002-17-A	4	L/N 10357	New
4	Slotted Clip Supports	314-0007-15-B	4	L/N100315-01	New
5	Washers	263-0001-17-A	8	L/N40-15318	New
12. Remarks Canada: Transport Canada Approved manufacturer no 27-06, Transport Canada STC no. SH06-24 United States: FAA STC no. SR02432NY					
13a. Certifies that the items identified above were manufactured in conformity to:		<input checked="" type="radio"/> Approved design data and are in condition for safe operation <input type="radio"/> Non approved design data specified in block 12.			
13b. Signature 		13c. Approved Organization. Number Inspector no: 001 / STC no SH06-24 Approved manufacturer no 27-06		14a. Certifies that unless otherwise specified in block 12, the work identified in block 11 and described in block 12 has been performed in compliance with the Canadian Aviation Regulations <input type="radio"/> CAR 571.10 Maintenance release. <input type="radio"/> Other regulation specified in block 12.	
13d. Name Nathalie Barbeau, Quality Manager		13e. Date (dd/mm/yyyy) 11/03/2010		14b. Signature 14c. Approved Organization Number 14d. Name 14e. Date (dd/mm/yyyy)	

Ref: Transport Canada: Form One

- 1- This document does not constitute authority to install the part.
- 2- Installers working in accordance with the national regulations of a country other than that specified in block 1 must ensure that their regulations recognize certifications from the country specified.
- 3- Statements 13a & 14a do not constitute installation certification. In all cases the technical record for the aircraft must contain an installation certification issued in accordance with the applicable national regulations before the aircraft may be flown

Master Document List

Helitowcart Inc.

Robinson R44 Helicopters Installation of BearPaw Model BP44


Report: HTC-MDL-BP-R44-1000 (Rev C)

PREPARED BY:

Simon Bernier
Staff Specialist - Structures

DATE: APR 15, 2010

APPROVED BY:

Mirko Zgela
Design Approval Representative DAR #310

DATE: APR 15, 2010

Revision	Revision Date	Revision of Entry	Entered by
C	2010 04 15	Addition of a rear U shaped clip in the streamline BearPaw Pad configuration	S. Bernier
B	2009 10 22	Introduction of new streamline BearPaw Pad configuration as alternate	S. Bernier
A	2006 09 07	Drawings are added to include the provision of shims during the installation.	N. Barbeau

1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-R44-1000	Compliance Plan - Robinson R44 Helicopters - Installation of Bear Paw Model BP44	NC	DAR 310	July 4, 2006
314-0011-00	BearPaw Model BP44 – Installation Instructions - R44	D	DAR 310	Apr 15, 2010
AAC-STR-BP-R44-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP44	NC	DAR 310	July 4, 2006
AAC-FTR-C-FBLO	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Aug 4, 2006
HTC-TM-BP-R44-1000	Structural Substantiation - BearPaw Streamline BP44	NC	DAR 310	Oct 22, 2009
ATS-EO-BP-R44-1000	Engineering Order - BearPaw Streamline BP44	NC	DAR 310	Apr 15, 2010

2.0 MASTER DRAWINGS

Drawings # / P/N	Title	Revision Status	Approval by	Date
112-0001-01-C	BearPaw Assembly	C	DAR 310	Sept 6, 2006
112-0001-01-E	BearPaw Streamline Assembly	E	DAR 310	Apr 15, 2010
314-0002-15-A	BearPaw – Iceblade	A	DAR 310	Apr 24, 2006
314-0004-15-A	BearPaw – Iceblade Threaded Rod	A	DAR 310	Apr 24, 2006
314-0005-15-A	BearPaw – Iceblade Assembly	A	DAR 310	Apr 24, 2006
314-0001-01-A	BearPaw - Pad	A	DAR 310	Apr 24, 2006
314-0001-01-B	BearPaw – Pad Streamline	B	DAR 310	Oct 22, 2009
314-0006-15-B	BearPaw – U Shaped Clip	B	DAR 310	July 31, 2006
314-0023-15-A	BearPaw – Low U Shaped Clip	A	DAR 310	Feb 23, 2010
314-0007-15-B	Bearpaw – Slotted Clip Support	B	DAR 310	July 31, 2006
314-0012-01-A	Filler Block ¼"	A	DAR 310	Aug 8, 2006
314-0014-01-A	Filler Block 3/32"	A	DAR 310	Sept 6, 2006
314-0015-01-A	Filler Block 1/8"	A	DAR 310	Sept 6, 2006
314-0022-01-A	Filler Block Rear	A	DAR 310	Oct 22, 2009

3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01-A	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01-A	Propriétés du UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05-A	Heat Shrink Specifications	A	N/A	Sept 6, 2006

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Annex B (BearPaw Pad Allowable Damage Drawing)	

INTRODUCTION

Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw for your Robinson R44.

General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance to your Robinson helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

Table 1 – Helitowcart Customer Support

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-2291 info@helitowcart.com

Helicopter Effectivity

This installation instruction applies to the following ROBINSON Helicopters:

Table 2 – Robinson Helicopter Effectivity

A/C Model	Serial no.	Type Certificate Data Sheet
R44	0271 thru 9999	H11NM
R44 II	1140, 10001 and subsequent	H11NM

Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

INTRODUCTION

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INSTALLATION

BearPaw Installation

Reference Documentation:

- [1] Robinson R44 - Maintenance Manual & Instruction for Continued Airworthiness. RTR460.
- [2] Annex A – BearPaw Assembly Drawings (112-0001-00-C & 112-0001-00-E)

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);
- Remove aft skid wearshoe & re-install the attaching screws.

Step 2: BearPaw Preparation

- With IceBlade Option: Install ice blades (Qty:2) under BearPaw pad as per drawing (112-0001-00) Ref [2];
- With IceBlade Option: Insert washer (Washer P/N 263-0001-17) through threaded part of the ice blade and secure with nut (P/N 262-0001-17);
- Position the BearPaw under skid at the aft intersection with the cross tube as per figure 1 with narrow edge pointing forward.

Step 3: BearPaw Set Up

- Insert washers (P/N 263-0001-17) through all four front bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert bolts(P/N261-0002-17) & (261-0003-17) and washer (P/N 263-0001-17) through BearPaw pad as per drawing (112-0001-00) Ref [2]
- If Streamline model, then apply step 3.1. See step 3.1described below.
- Position the BearPaw pad under the skid
- Insert small filler blocks (P/N314-0012-01) & (P/N314-0014-01) at front of BearPaw& Insert filler blocks (P/N314-0015-01) at center of BearPaw as per drawing (112-0001-00) Ref [2];
- The use of filler blocks mentioned above may be increased, decreased, replaced or complemented by the use of washers (P/N 263-0001-17). Bolts (P/N261-0002-17) & (261-0003-17) may be replaced by longer or shorter AN4 bolts as required.
- Insert both U-shaped clips (P/N 314-0006-15) through bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert slotted clip supports (P/N 314-0007-15) through all four bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb.

Step 3.1: With the Streamline Version of the Bearpaw (P/N 112-0001-00-E)

- Insert washers (P/N 263-0001-17) through bolts (P/N261-0002-17)
- Insert bolts (P/N261-0002-17) and washer (P/N 263-0001-17) through the rear BearPaw pad as per drawing (112-0001-00-E) Ref [2]
- Insert rear filler block (P/N 314-0022-01) at the rear of BearPaw as per drawing (112-0001-00-E) Ref [2];
- Insert two washers (P/N 263-0001-17) per bolts (P/N261-0002-17) (four washers total)
- Insert Low U-shaped clip (P/N 314-0023-15) through bolts: (P/N261-0002-17) as per drawing (112-0001-00-E) Ref [2];
- Insert slotted clip supports (P/N 314-0007-15) through bolts. Position slotted clip supports with rounded edge toward helicopter skid;

- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Bolts (P/N261-0002-17) may be replaced by longer or shorter AN4 bolts as required. Max. torque on nuts 60 in.-lb.

Step 4: Final Step

- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

Figure 1 - Installed BearPaw Model BP44 (112-0001-00-C)

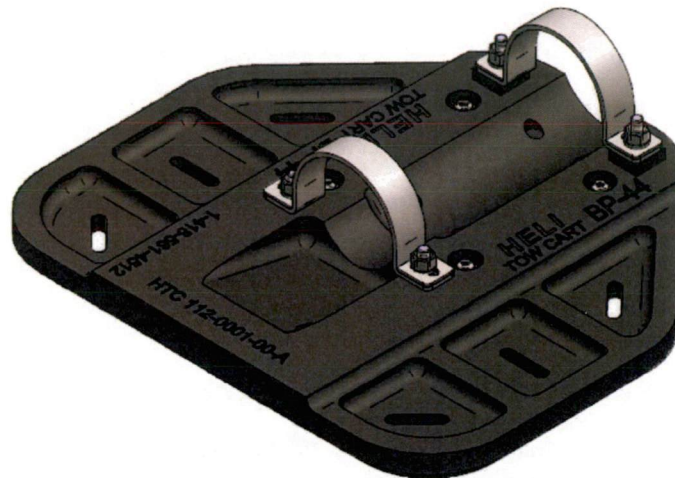
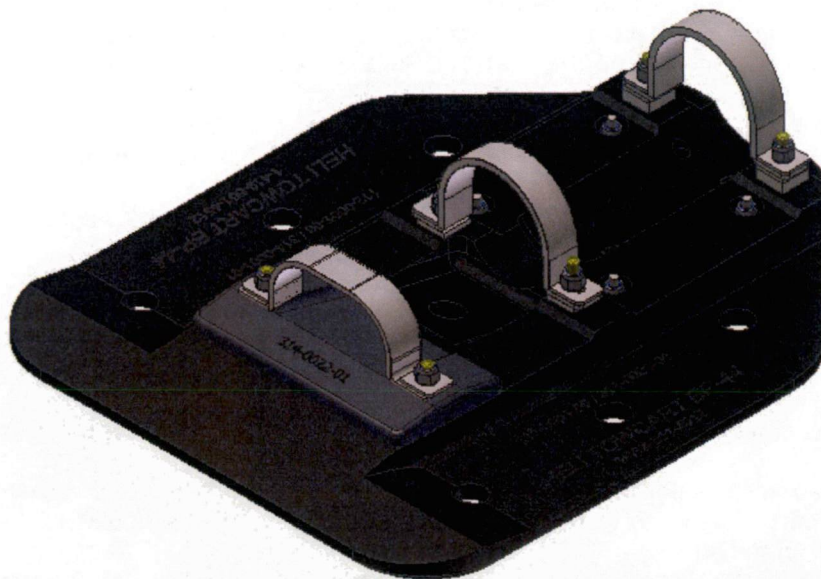


Figure 2 - BearPaw Model BP44 Streamline (112-0001-00-E)



- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Bolts (P/N261-0002-17) may be replaced by longer or shorter AN4 bolts as required. Max. torque on nuts 60 in.-lb.

Step 4: Final Step

- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

Figure 1 - Installed BearPaw Model BP44 (112-0001-00-C)

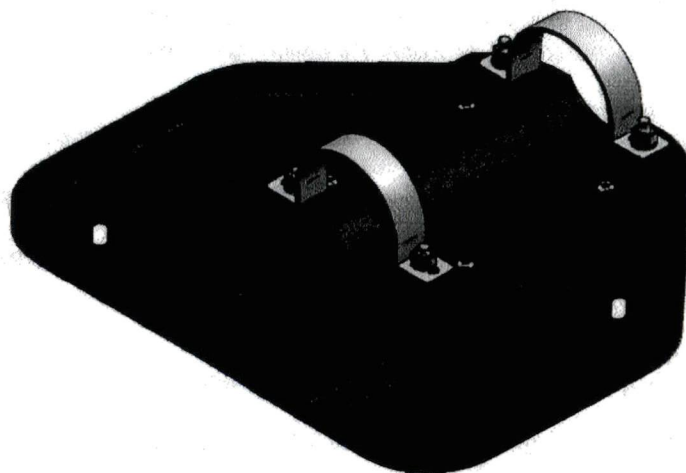
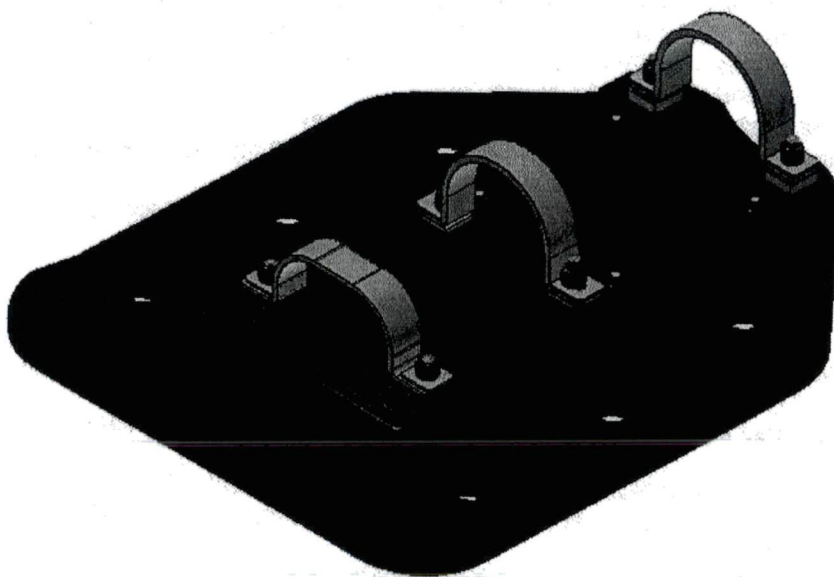


Figure 2 - BearPaw Model BP44 Streamline (112-0001-00-E)



BearPaw Removal

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15) and U-shaped clips (P/N 314-0006-15);
- With the Streamline Version of the Bearpaw (P/N 112-0001-00-E) remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15) and rear U-shaped clips (P/N 314-0023-15);
- Remove BearPaw pad (P/N 314-0001-01);
- Inspect skid tubes to confirm serviceability;
- Re-install aft wearshoe with screws as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required.

Weight & Balance

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

Table 3 – Weight & Balance Data

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP44	5.9 Lb 2.7 Kg	0.0in. (0.0mm)	0.0lb-kG (0.0mm-kG)	128.5 in 3.26 m	758.1 in-lb 8.8 m-kG
Helitowcart BearPaw Model BP44 - Streamline	7.0 Lb 3.2 Kg	0.0in. (0.0mm)	0.0lb-kG (0.0mm-kG)	128.5 in 3.26 m	889.5 in-lb 10.4 m-kG

Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

Table 4 – Parts List

Description	Qty	Part No.	Name (Drawing no.)
BearPaw Model BP44	1	112-0001-00	112-0001-00-C / BearPaw Assembly 112-0001-00-E / BearPaw Streamline Assembly
BearPaw pad	1	314-0001-01	314-0001-01-A / BearPaw – Pad (VNR088) 314-0001-01-B / BearPaw – Pad Streamline
Low U Shaped Clips	1	314-0023-15	BearPaw - Low U Shaped Clips
U Shaped Clips	2	314-0006-15	BearPaw - U Shaped Clips (VNR087)
Slotted Clip Support	6	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks rear	1	314-0022-01	BearPaw – Filler block Rear
Filler blocks 1/4"	2	314-0012-01	BearPaw – Filler block 1/4" (VNR099)
Filler blocks 3/32"	2	314-0014-01	BearPaw – Filler block 3/32" (VNR103)
Filler blocks 1/8"	2	314-0015-01	BearPaw – Filler block 1/8" (VNR104)
Bolts	2 *(+2)	261-0002-17	Bolt- AN4-15 *Note: for Streamline Assembly
Bolts	2	261-0003-17	Bolt- AN4-16
Nuts	4 *(+2)	262-0001-17	Nut- MS20-365-428 *Note: +2 for Streamline Assembly
Washers	8 *(+8)	263-0001-17	Washer – AN960-416 *Note: +8 for Streamline Assembly
Shrink	3	314-0016-00	BearPaw – Shrink Specifications & Installation
IceBlade Option Model OIB	2	314-0005-15	VNR086 / IceBlade Assembly
Nuts	4	262-0001-17	Nut- MS20-365-428
Washers	4	263-0001-17	Washer – AN960-416

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Table 4 – Parts List

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BearPaw pad	1	314-0001-01	314-0001-01-A / BearPaw – Pad (VNR088) 314-0001-01-B / BearPaw – Pad Streamline
Low U Shaped Clips	1	314-0023-15	BearPaw - Low U Shaped Clips
U Shaped Clips	2	314-0006-15	BearPaw - U Shaped Clips (VNR087)
Slotted Clip Support	6	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks rear	1	314-0022-01	BearPaw – Filler block Rear
Filler blocks 1/4"	2	314-0012-01	BearPaw – Filler block 1/4" (VNR099)
Filler blocks 3/32"	2	314-0014-01	BearPaw – Filler block 3/32" (VNR103)
Filler blocks 1/8"	2	314-0015-01	BearPaw – Filler block 1/8" (VNR104)
Bolts	2 *(+2)	261-0002-17	Bolt- AN4-15 *Note: for Streamline Assembly
Bolts	2	261-0003-17	Bolt- AN4-16
Nuts	4 *(+2)	262-0001-17	Nut- MS20-365-428 *Note: +2 for Streamline Assembly
Washers	8 *(+8)	263-0001-17	Washer – AN960-416 *Note: +8 for Streamline Assembly
Shrink	3	314-0016-00	BearPaw – Shrink Specifications & Installation
IceBlade Option Model OIB	2	314-0005-15	VNR086 / IceBlade Assembly
Nuts	4	262-0001-17	Nut- MS20-365-428
Washers	4	263-0001-17	Washer – AN960-416

INSPECTION

Life Limited Items

There are no life limited items for the Helitowcart BearPaw.

Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:
 Table 5 – Tolerances for cracks & wear;
 Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2) or
 Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 300 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the R44 landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 300 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

300 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:
 Table 5 – Tolerances for cracks & wear;
 Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2); or
 Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

Table 5 – Tolerances for Cracks & Wear

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,350	0,050	
B	1,000	0,250	
C	0,375	0,075	<u>Stiffeners</u> : NO cracks in stiffeners. <u>Pockets</u> : Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,350	0,050	

E	N/A	N/A	No cracks allowed in zone E
F	0,350	0,050	<u>For P/N 314-0001-01-B Only</u>
G	0,75	0,050	<u>For P/N 314-0001-01-B Only</u>

Overhaul Requirements

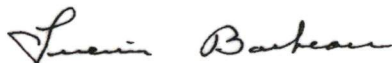
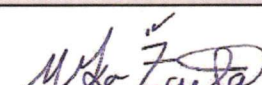
- Not applicable for the designated application of this device.

REVISIONS & APPROVAL

Revisions

Date	Rev	Nature of Revisions
April 15, 2010	D	Addition of a rear U shaped clip in the Streamline BearPaw Pad configuration.
October 22, 2009	C	Introduction of new streamline BearPaw Pad configuration as alternate.
September 7, 2006	B	<ul style="list-style-type: none"> - Added filler blocks and heat shrink to product list. - Modified recommended bolt models (lengthened) - Revised inspection requirements from 100 hour to 300 hour intervals. - Identification of the IceBlade assembly as an optional feature.
June 12, 2006	A	Initial issue

Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	April 15, 2010
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	April 15, 2010

Annex A

See: BearPaw Assembly, drawing no. 112-0001-00-C
 BearPaw Streamline Assembly, drawing no. 112-0001-00-E

Annex B

See: BearPaw Pad Allowable Damage Drawing, drawing no. 314-0001-01-A (VNR088) page 2 of 2.
 BearPaw Streamline Allowable Damage Drawing, drawing no. 314-0001-01-B page 3 of 3)

E	N/A	N/A	No cracks allowed in zone E
F	0,350	0,050	<u>For P/N 314-0001-01-B Only</u>
G	0,75	0,050	<u>For P/N 314-0001-01-B Only</u>

Overhaul Requirements


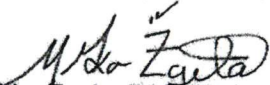
- Not applicable for the designated application of this device.

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Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	April 15, 2010
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	April 15, 2010

Annex A

See: BearPaw Assembly, drawing no. 112-0001-00-C
 BearPaw Streamline Assembly, drawing no. 112-0001-00-E

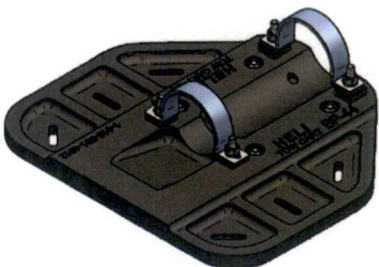
Annex B

See: BearPaw Pad Allowable Damage Drawing, drawing no. 314-0001-01-A (VNR088) page 2 of 2.
 BearPaw Streamline Allowable Damage Drawing, drawing no. 314-0001-01-B page 3 of 3)

Annex A

BearPaw Assembly, Drawing no. 112-0001-00-C
BearPaw Streamline Assembly, Drawing no. 112-0001-00-E

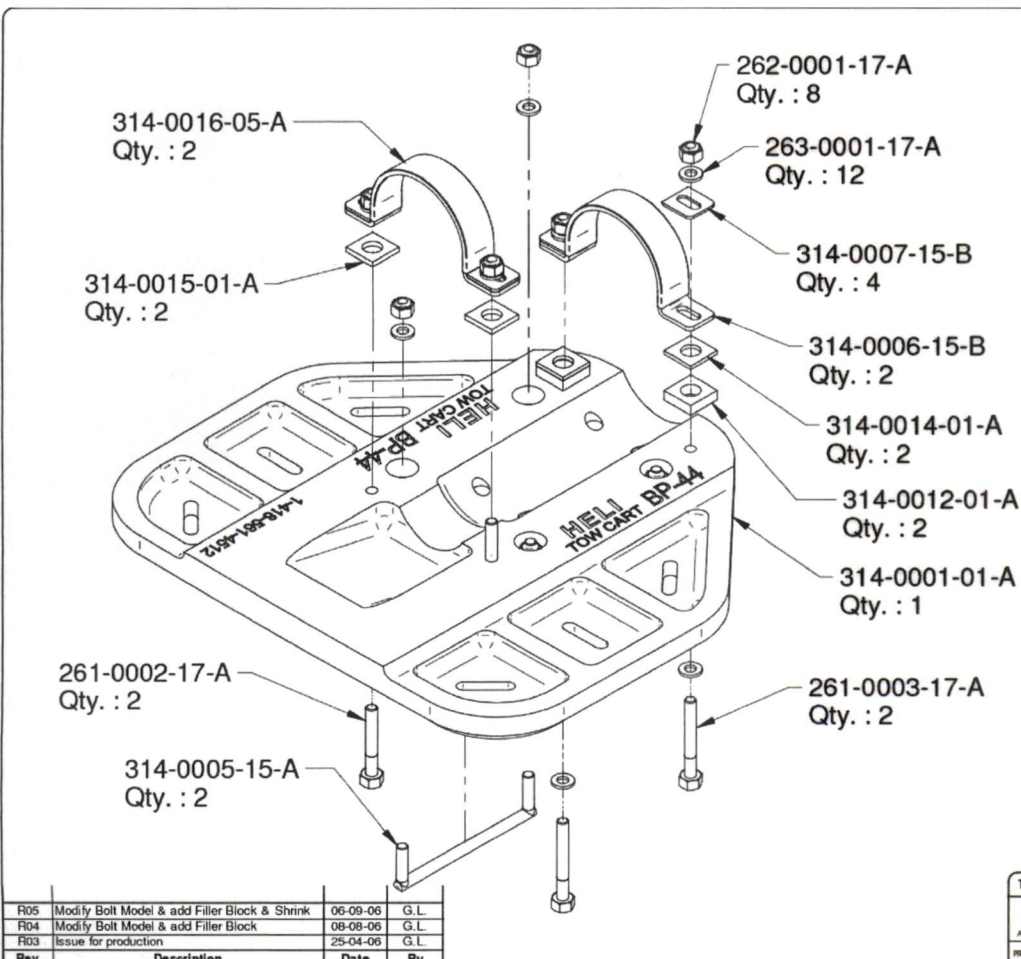
N°	Qty	Description	Part #
1°	1	Bearpaw - Pad	314-0001-01-A
2°	2	Bearpaw - Iceblade assembly	314-0005-15-A
3°	2	Bearpaw - U Shaped clip	314-0006-15-B
4°	4	Bearpaw - Slotted clip support	314-0007-15-B
5°	8	Nut MS20-365-428	262-0001-17-A
6°	12	Washer AN960-416	263-0001-17-A
7°	2	Bolt AN4-15A	261-0002-17-A
8°	2	Bearpaw - Filler Block 1/4"	314-0012-01-A
9°	2	Bolt AN4-16A	261-0003-17-A
10°	2	Bearpaw - Shrink 1"x5"	314-0016-05-A
11°	2	Bearpaw - Filler Block 1/8"	314-0015-01-A
12°	2	Bearpaw - Filler Block 3/32"	314-0014-01-A



NOTE : Iceblade assembly can be omitted from installation (Optional)

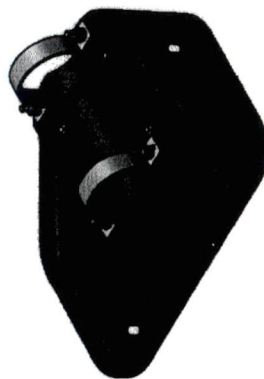


TOLERANCES		Title / Titre		Revision / Révision	
1/8" ± 1/32"		Designe par / Désigné by	G. Lapointe	2006-04-25	
1/16" ± 0.010"		Drawn by / Dessiné by	G. Lapointe	2006-04-25	
1/32" ± 0.005"		Written by / Rédigé by	G. Lapointe	2006-04-25	
ANGLE ± 1°		Approved by / Approuvé by	G. Lapointe	2006-04-25	
		Scale / Echelle	B	Scale / Echelle	N/A
		Number of pieces / Nombre de pièces	112-0001-00-C	Page 1 of 1	1 de 1

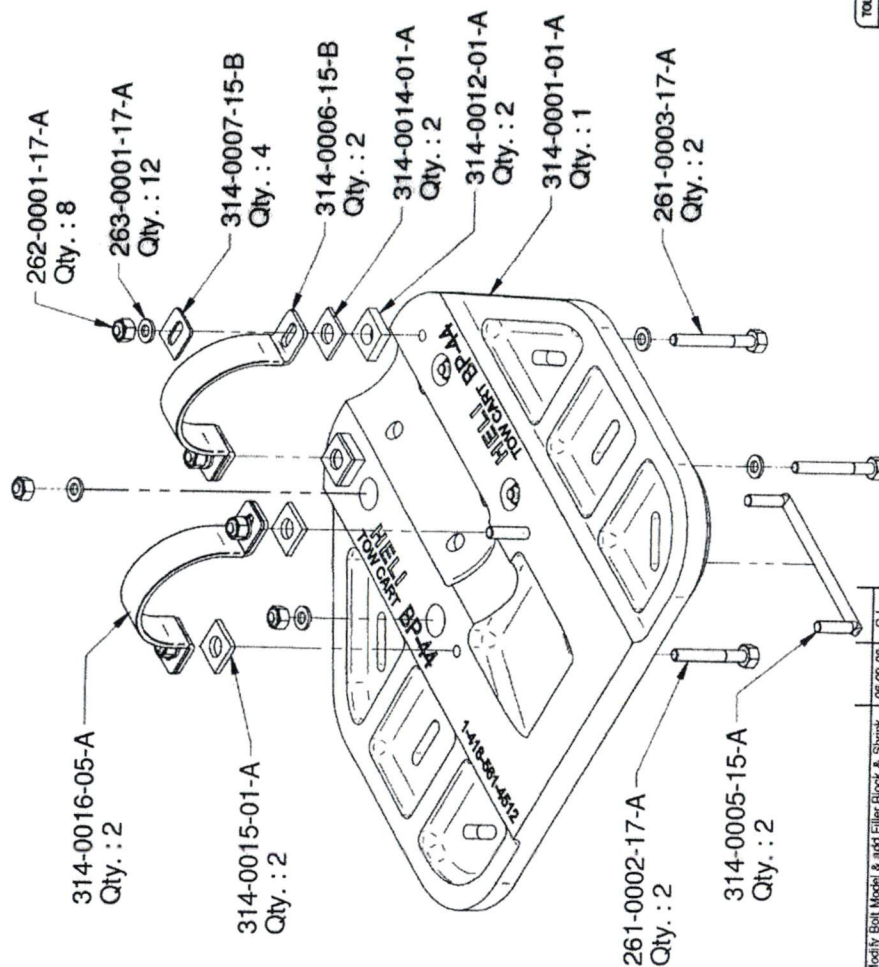


Rev.	Description	Date	By
R05	Modify Bolt Model & add Filler Block & Shrink	06-09-06	G.L.
R04	Modify Bolt Model & add Filler Block	09-08-06	G.L.
R03	Issue for production	25-04-06	G.L.

N°	Qty	Description	Part #
1"	1	Bearpaw - Pad	314-0001-01-A
2"	2	Bearpaw - Iceblade assembly	314-0005-15-A
3"	2	Bearpaw - U Shaped clip	314-0006-15-B
4"	4	Bearpaw - Slotted clip support	314-0007-15-B
5"	8	Nut MS20-365-428	262-0001-17-A
6"	12	Washer AN960-416	263-0001-17-A
7"	2	Bolt AN4-15A	261-0002-17-A
8"	2	Bearpaw - Filler Block 1/4"	314-0012-01-A
9"	2	Bolt AN4-16A	261-0003-17-A
10"	2	Bearpaw - Shrink TYS	314-0016-05-A
11"	2	Bearpaw - Filler Block 1/8"	314-0015-01-A
12"	2	Bearpaw - Filler Block 3/32"	314-0014-01-A



NOTE : Iceblade assembly can be omitted from installation (Optional)



HELI TOW CART		THIS DOCUMENT IS PROPERTY OF VANAIR REPRODUCTION FROM THIS DOCUMENT WITHOUT OBTAINING PRIOR TO WRITTEN PERMISSION FOR REPRODUCTION IS STRICTLY PROHIBITED
Name: G. Lapointe Title: Designer Date: 2006-04-25 Rev: 1 de 1	Project: 112-0001-00-C Part: 314-0011-00-C	Scale: 1:1 Unit: mm Material: N/A Finish: VERNIS

Rev.	Description	Date	By
R05	Modify Bolt Model & add Filler Block & Shrink	06-09-06	G.L.
R04	Modify Bolt Model & add Filler Block	06-09-06	G.L.
R03	Issue for production	25-04-06	G.L.

NOTE:

- ICEBLADE ASSEMBLY CAN BE OMITTED FROM INSTALLATION (OPTIONAL)
- FASTENERS LENGTH TO BE DETERMINED AT THE INSTALLATION

ISO SCALE 1/4

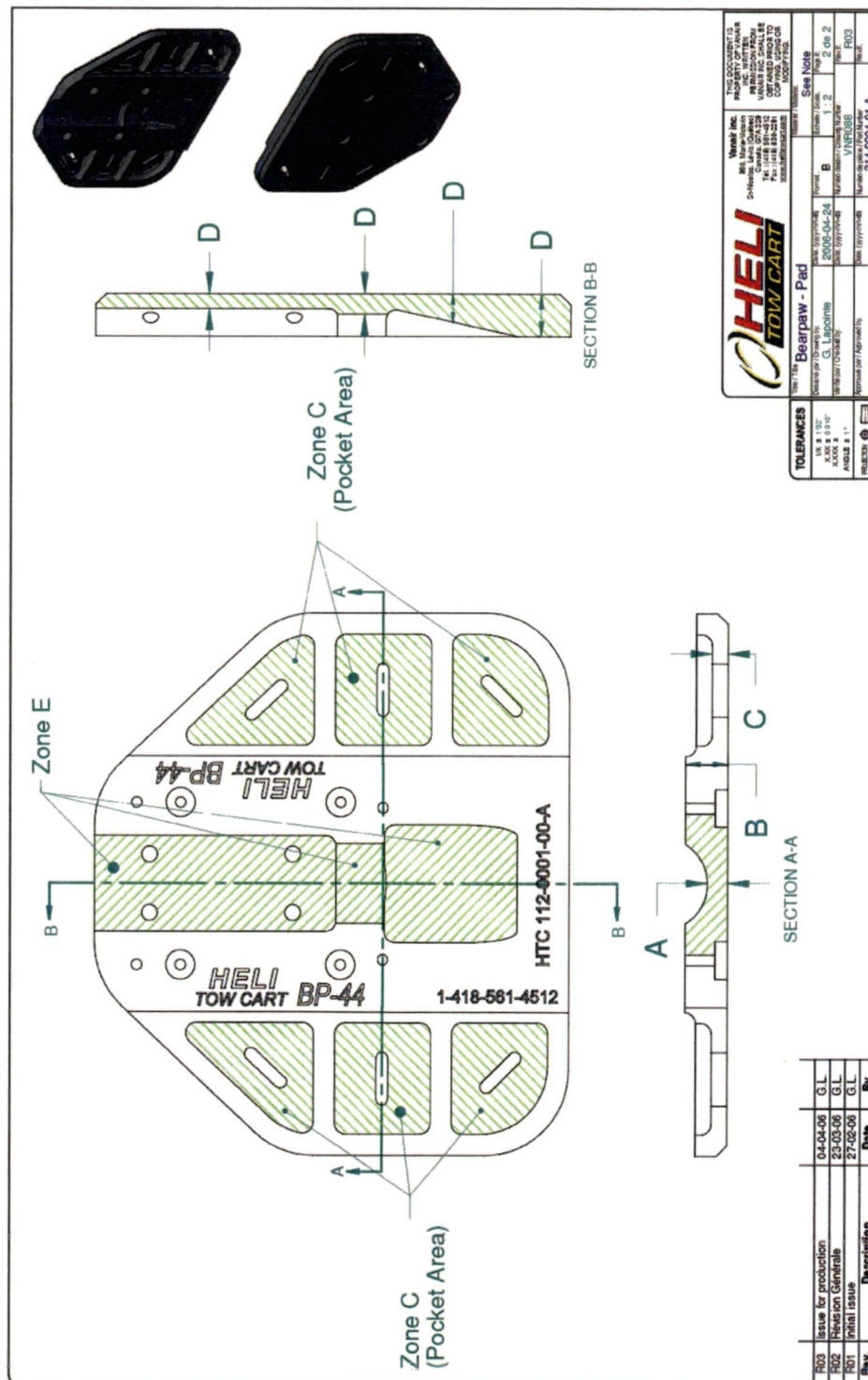
ITEM	QTY	PART NUMBER	DESCRIPTION	SIZE
15	1	314-0023-15-A	BEARPAW U-SHAPED C.I.P. REAR	3/8"
13	3	314-0016-05-A	BEARPAW - SHIM 135	3/8"
12	2	314-0015-01-A	BEARPAW - FILLER BLOCK 1/8"	3/8"
11	2	314-0014-01-A	BEARPAW - FILLER BLOCK 3/32"	3/8"
10	2	261-0002-17-A	BOLT M16 15A	3/4"
9	2	261-0003-17-A	NUT M16 15A	3/4"
8	2	314-0007-15-A	BOLT M16 15A	3/4"
7	2	314-0008-15-A	NUT M16 15A	3/4"
6	2	314-0009-15-A	BEARPAW - FILLER BLOCK 1/4"	3/4"
5	2	314-0010-15-A	BEARPAW - ICE BLADE ASSEMBLY	3/4"
4	2	314-0011-15-A	BEARPAW - FILLER BLOCK REAR	3/4"
3	2	314-0012-15-A	BEARPAW - FILLER BLOCK REAR	3/4"
2	1	314-0013-15-A	BEARPAW - FILLER BLOCK REAR	3/4"
1	1	314-0014-15-A	BEARPAW - FILLER BLOCK REAR	3/4"

Annex B

BearPaw Pad Allowable Damage Drawing, Drawing no. 314-0001-01-A (VNR088), Page 2 of 2
BearPaw Streamline Allowable Damage Drawing, Drawing no. 314-0001-01-B, Page 3 of 3

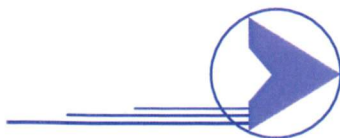
Annex B

BearPaw Pad Allowable Damage Drawing, Drawing no. 314-0001-01-A (VNR088), Page 2 of 2
BearPaw Streamline Allowable Damage Drawing, Drawing no. 314-0001-01-B, Page 3 of 3











Engineering Order

Title: Engineering Order - BearPaw Streamline BP44				EO# ATS-EO-BP-R44-1000 Rev NC	
Prepared by:  S. Bernier	Design: N/A	Mech: N/A	Stress: N/A	Approved:  Mirko Zgela (DAR #310)	Date: Apr 15, 2010
A/C Effectivity R44 R44 II		Registration: N/A		Serial#: 0271 thru 9999 1140, 10001 and subsequent	
Reference Documents:					
[1] Robinson R44 - Maintenance Manual & Instruction for Continued Airworthiness. RTR460 [2] 314-0011-00-A Rev_D BearPaw Model BP44 – Installation Instructions - R44, dated April 15, 2010 [3] AAC-STR-BP-R44-1000, Structural Substantiation – Helitowcart (Vanair Inc.) BearPaw Model BP44, dated July 4, 2006					
Applicable Drawings:					
[4] 112-0001-00-E BearPaw Streamline Assembly					
Background: The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance to your Robinson helicopter.					
Description of Change: The BearPaw Streamline Pad (P/N 314-0001001-B) is longer than the original design. An additional support is required to provide added support to the Pad in the unlikely event that a Pad would get stuck into the mud. Figures (1) shows the BearPaw Streamline assembly .					

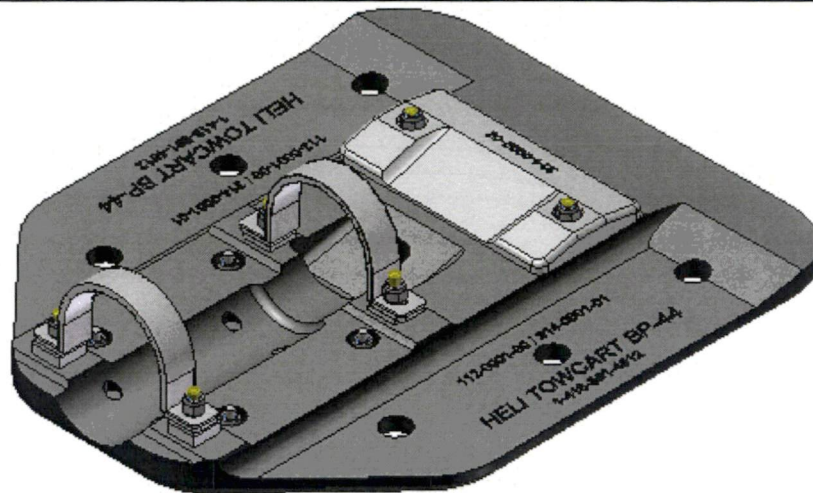
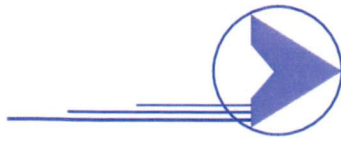


Figure 1 - BearPaw Streamline Assembly

New configuration:

As a preventive measure to reduce the bending moment and the load in the middle U clips during lift-off a U clip is added. Figure 2 shows the new assembly.

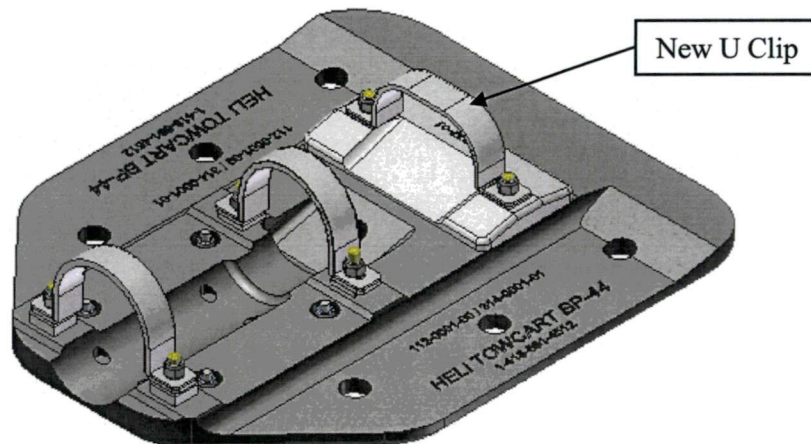


Figure 2 - BearPaw Streamline New Assembly

Structural Analysis:

No additional structural analysis is needed since the two front U clips have proven to take the load during the landing in the document # AAC-STR-BP-R44-1000, Structural Substantiation – Helitowcart (Vanair Inc.) BearPaw Model BP44, dated July 4, 2006.



Aviatech Technical Services Inc.

3005 rue Lindbergh
Trois-Rivières, Québec
G9A 5E1

Installation Instructions:

1	Install the BearPaw Streamline assembly as per document #314-0011-00, Rev D, BearPaw Model BP44 – Installation Instructions - R44
---	---

3. FILL CLIENT INSPECTION FORM

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

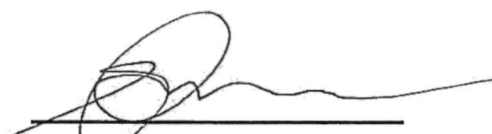
Master Document List

Helitowcart Inc.

Robinson R44 Helicopters Installation of BearPaw Model BP44

Report: HTC-MDL-BP-R44-1000 (Rev C)

PREPARED BY:


Simon Bernier
Staff Specialist - Structures

DATE: APR 15, 2010

APPROVED BY:


Mirko Zgela
Design Approval Representative DAR #310

DATE: APR 15, 2010

Revision	Revision Date	Revision of Entry	Entered by
C	2010 04 15	Addition of a rear U shaped clip in the streamline BearPaw Pad configuration	S. Bernier
B	2009 10 22	Introduction of new streamline BearPaw Pad configuration as alternate	S. Bernier
A	2006 09 07	Drawings are added to include the provision of shims during the installation.	N. Barbeau

1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-R44-1000	Compliance Plan - Robinson R44 Helicopters - Installation of Bear Paw Model BP44	NC	DAR 310	July 4, 2006
314-0011-00	BearPaw Model BP44 – Installation Instructions - R44	D	DAR 310	Apr 15, 2010
AAC-STR-BP-R44-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP44	NC	DAR 310	July 4, 2006
AAC-FTR-C-FBLO	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Aug 4, 2006
HTC-TM-BP-R44-1000	Structural Substantiation - BearPaw Streamline BP44	NC	DAR 310	Oct 22, 2009
ATS-EO-BP-R44-1000	Engineering Order - BearPaw Streamline BP44	NC	DAR 310	Apr 15, 2010

2.0 MASTER DRAWINGS

Drawings # / P/N	Title	Revision Status	Approval by	Date
112-0001-01-C	BearPaw Assembly	C	DAR 310	Sept 6, 2006
112-0001-01-E	BearPaw Streamline Assembly	E	DAR 310	Apr 15, 2010
314-0002-15-A	BearPaw – Iceblade	A	DAR 310	Apr 24, 2006
314-0004-15-A	BearPaw – Iceblade Threaded Rod	A	DAR 310	Apr 24, 2006
314-0005-15-A	BearPaw – Iceblade Assembly	A	DAR 310	Apr 24, 2006
314-0001-01-A	BearPaw - Pad	A	DAR 310	Apr 24, 2006
314-0001-01-B	BearPaw – Pad Streamline	B	DAR 310	Oct 22, 2009
314-0006-15-B	BearPaw – U Shaped Clip	B	DAR 310	July 31, 2006
314-0023-15-A	BearPaw – Low U Shaped Clip	A	DAR 310	Apr 15, 2010
314-0007-15-B	Bearpaw – Slotted Clip Support	B	DAR 310	July 31, 2006
314-0012-01-A	Filler Block 1/4"	A	DAR 310	Aug 8, 2006
314-0014-01-A	Filler Block 3/32"	A	DAR 310	Sept 6, 2006
314-0015-01-A	Filler Block 1/8"	A	DAR 310	Sept 6, 2006
314-0022-01-A	Filler Block Rear	A	DAR 310	Oct 22, 2009

3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01-A	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01-A	Propriétés du UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05-A	Heat Shrink Specifications	A	N/A	Sept 6, 2006

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Annex A (BearPaw Assembly Drawing)	
Annex B (BearPaw Pad Allowable Damage Drawing)	

INTRODUCTION

Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw for your Robinson R44.

General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance to your Robinson helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

Table 1 – Helitowcart Customer Support

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-2291 info@helitowcart.com

Helicopter Effectivity

This installation instruction applies to the following ROBINSON Helicopters:

Table 2 – Robinson Helicopter Effectivity

A/C Model	Serial no.	Type Certificate Data Sheet
R44	0271 thru 9999	H11NM
R44 II	1140, 10001 and subsequent	H11NM

Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

INSTALLATION

BearPaw Installation

Reference Documentation:

- [1] Robinson R44 - Maintenance Manual & Instruction for Continued Airworthiness. RTR460.
- [2] Annex A – BearPaw Assembly Drawings (112-0001-00-C & 112-0001-00-E)

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);
- Remove aft skid wearshoe & re-install the attaching screws.

Step 2: BearPaw Preparation

- With IceBlade Option: Install ice blades (Qty:2) under BearPaw pad as per drawing (112-0001-00) Ref [2];
- With IceBlade Option: Insert washer (Washer P/N 263-0001-17) through threaded part of the ice blade and secure with nut (P/N 262-0001-17);
- Position the BearPaw under skid at the aft intersection with the cross tube as per figure 1 with narrow edge pointing forward.

Step 3: BearPaw Set Up

- Insert washers (P/N 263-0001-17) through all four front bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert bolts(P/N261-0002-17) & (261-0003-17) and washer (P/N 263-0001-17) through BearPaw pad as per drawing (112-0001-00) Ref [2]
- If Streamline model, then apply step 3.1. See step 3.1described below.
- Position the BearPaw pad under the skid
- Insert small filler blocks (P/N314-0012-01) & (P/N314-0014-01) at front of BearPaw& Insert filler blocks (P/N314-0015-01) at center of BearPaw as per drawing (112-0001-00) Ref [2];
- The use of filler blocks mentioned above may be increased, decreased, replaced or complemented by the use of washers (P/N 263-0001-17). Bolts (P/N261-0002-17) & (261-0003-17) may be replaced by longer or shorter AN4 bolts as required.
- Insert both U-shaped clips (P/N 314-0006-15) through bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert slotted clip supports (P/N 314-0007-15) through all four bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb.

Step 3.1: With the Streamline Version of the Bearpaw (P/N 112-0001-00-E)

- Insert washers (P/N 263-0001-17) through bolts (P/N261-0002-17)
- Insert bolts (P/N261-0002-17) and washer (P/N 263-0001-17) through the rear BearPaw pad as per drawing (112-0001-00-E) Ref [2]
- Insert rear filler block (P/N 314-0022-01) at the rear of BearPaw as per drawing (112-0001-00-E) Ref [2];
- Insert two washers (P/N 263-0001-17) per bolts (P/N261-0002-17) (four washers total)
- Insert Low U-shaped clip (P/N 314-0023-15) through bolts: (P/N261-0002-17) as per drawing (112-0001-00-E) Ref [2];
- Insert slotted clip supports (P/N 314-0007-15) through bolts. Position slotted clip supports with rounded edge toward helicopter skid;

- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Bolts (P/N261-0002-17) may be replaced by longer or shorter AN4 bolts as required. Max. torque on nuts 60 in.-lb.

Step 4: Final Step

- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

Figure 1 - Installed BearPaw Model BP44 (112-0001-00-C)

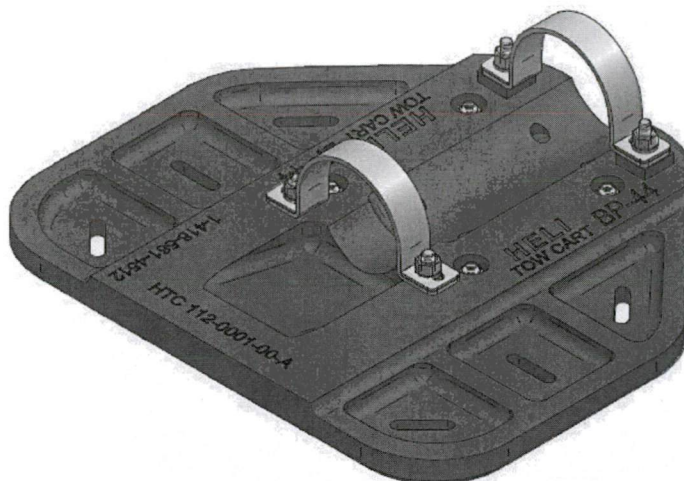
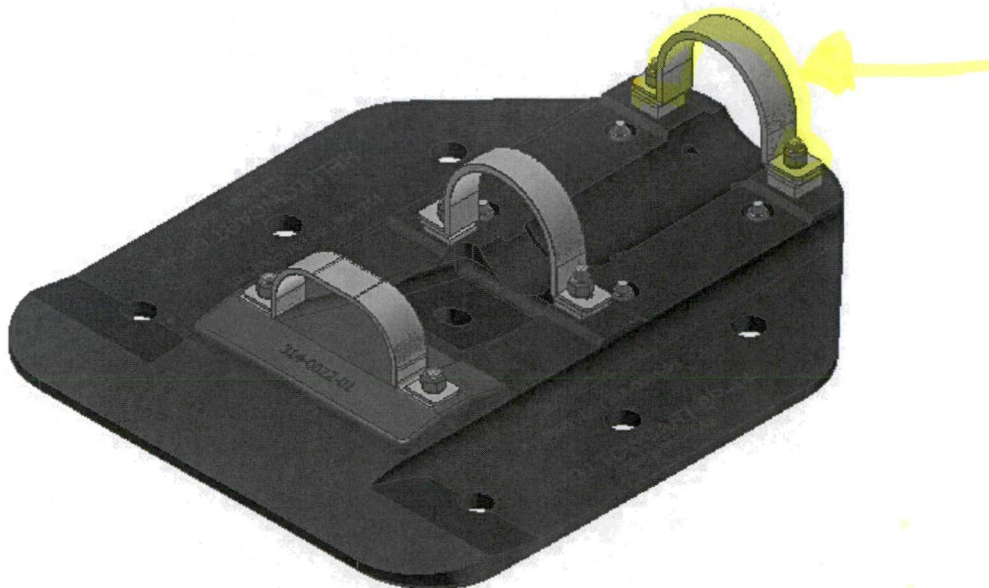


Figure 2 - BearPaw Model BP44 Streamline (112-0001-00-E)



BearPaw Removal

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 1/2" (38mm);

Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15) and U-shaped clips (P/N 314-0006-15);
- With the Streamline Version of the Bearpaw (P/N 112-0001-00-E) remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15) and rear U-shaped clips (P/N 314-0023-15);
- Remove BearPaw pad (P/N 314-0001-01);
- Inspect skid tubes to confirm serviceability;
- Re-install aft wearshoe with screws as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required.

Weight & Balance

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

Table 3 – Weight & Balance Data

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP44	5.9 Lb 2.7 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	758.1 in-lb 8.8 m-kg
Helitowcart BearPaw Model BP44 - Streamline	7.0 Lb 3.2 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	889.5 in-lb 10.4 m-kg

Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

Table 4 – Parts List

Description	Qty	Part No.	Name (Drawing no.)
BearPaw Model BP44	1	112-0001-00	112-0001-00-C / BearPaw Assembly 112-0001-00-E / BearPaw Streamline Assembly
BearPaw pad	1	314-0001-01	314-0001-01-A / BearPaw – Pad (VNR088) 314-0001-01-B / BearPaw – Pad Streamline
Low U Shaped Clips	1	314-0023-15	BearPaw - Low U Shaped Clips
U Shaped Clips	2	314-0006-15	BearPaw - U Shaped Clips (VNR087)
Slotted Clip Support	6	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks rear	1	314-0022-01	BearPaw – Filler block Rear
Filler blocks 1/4"	2	314-0012-01	BearPaw – Filler block 1/4" (VNR099)
Filler blocks 3/32"	2	314-0014-01	BearPaw – Filler block 3/32" (VNR103)
Filler blocks 1/8"	2	314-0015-01	BearPaw – Filler block 1/8" (VNR104)
Bolts	2 *(+2)	261-0002-17	Bolt- AN4-15 *Note: for Streamline Assembly
Bolts	2	261-0003-17	Bolt- AN4-16
Nuts	4 *(+2)	262-0001-17	Nut- MS20-365-428 *Note: +2 for Streamline Assembly
Washers	8 *(+8)	263-0001-17	Washer – AN960-416 *Note: +8 for Streamline Assembly
Shrink	3	314-0016-00	BearPaw – Shrink Specifications & Installation
IceBlade Option Model OIB	2	314-0005-15	VNR086 / IceBlade Assembly
Nuts	4	262-0001-17	Nut- MS20-365-428
Washers	4	263-0001-17	Washer – AN960-416

INSPECTION

Life Limited Items

There are no life limited items for the Helitowcart BearPaw.

Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:
 Table 5 – Tolerances for cracks & wear;
 Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2) or
 Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 300 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the R44 landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 300 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

300 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:
 Table 5 – Tolerances for cracks & wear;
 Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2); or
 Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

Table 5 – Tolerances for Cracks & Wear

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,350	0,050	
B	1,000	0,250	
C	0,375	0,075	<u>Stiffeners</u> : NO cracks in stiffeners. <u>Pockets</u> : Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,350	0,050	

E	N/A	N/A	No cracks allowed in zone E
F	0,350	0,050	<u>For P/N 314-0001-01-B Only</u>
G	0,75	0,050	<u>For P/N 314-0001-01-B Only</u>


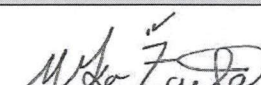
Overhaul Requirements

- Not applicable for the designated application of this device.

REVISIONS & APPROVAL**Revisions**

Date	Rev	Nature of Revisions
April 15, 2010	D	Addition of a rear U shaped clip in the Streamline BearPaw Pad configuration.
October 22, 2009	C	Introduction of new streamline BearPaw Pad configuration as alternate.
September 7, 2006	B	- Added filler blocks and heat shrink to product list. - Modified recommended bolt models (lengthened) - Revised inspection requirements from 100 hour to 300 hour intervals. - Identification of the IceBlade assembly as an optional feature.
June 12, 2006	A	Initial issue

Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	April 15, 2010
External Approval :		
Transport Canada	 Mirko Zgela, DARJ #310	April 15, 2010

Annex A

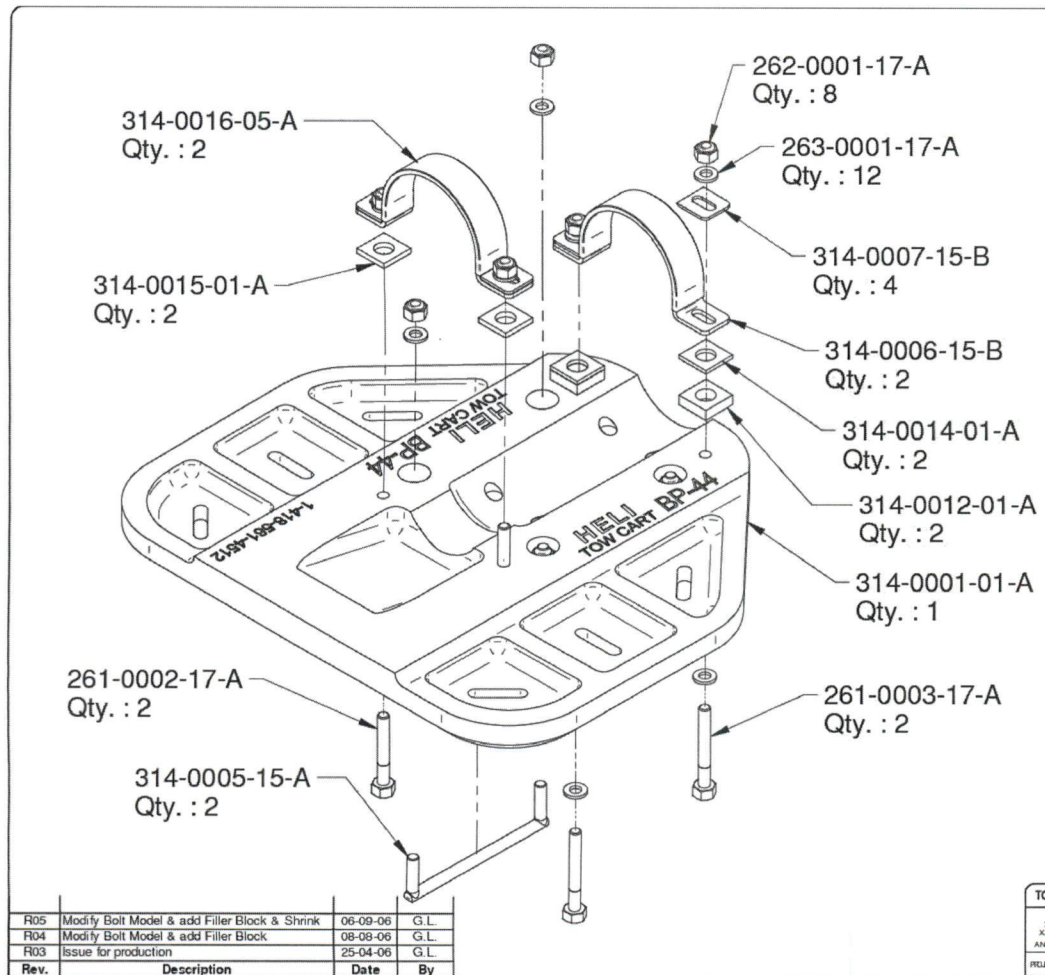
See: BearPaw Assembly, drawing no. 112-0001-00-C
BearPaw Streamline Assembly, drawing no. 112-0001-00-E

Annex B

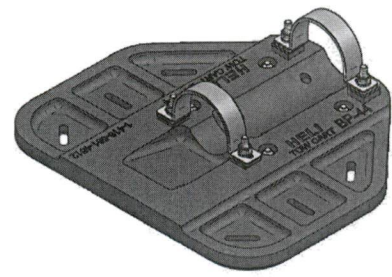
See: BearPaw Pad Allowable Damage Drawing, drawing no. 314-0001-01-A (VNR088) page 2 of 2.
BearPaw Streamline Allowable Damage Drawing, drawing no. 314-0001-01-B page 3 of 3)

Annex A

BearPaw Assembly, Drawing no. 112-0001-00-C
BearPaw Streamline Assembly, Drawing no. 112-0001-00-E



N°	Qty	Description	Part #
1"	1	Bearpaw - Pad	314-0001-01-A
2"	2	Bearpaw - Iceblade assembly	314-0005-15-A
3"	2	Bearpaw - U Shaped clip	314-0006-15-B
4"	4	Bearpaw - Slotted clip support	314-0007-15-B
5"	8	Nut MS20-365-428	262-0001-17-A
6"	12	Washer AN960-416	263-0001-17-A
7"	2	Bolt AN4-15A	261-0002-17-A
8"	2	Bearpaw - Filler Block 1/4"	314-0012-01-A
9"	2	Bolt AN4-16A	261-0003-17-A
10"	2	Bearpaw - Shrink 1"x5"	314-0016-05-A
11"	2	Bearpaw - Filler Block 1/8"	314-0015-01-A
12"	2	Bearpaw - Filler Block 3/32"	314-0014-01-A



NOTE : Iceblade assembly can be omitted from installation (Optional)

Rev.	Description	Date	By
R05	Modify Bolt Model & add Filler Block & Shrink	06-09-06	G.L.
R04	Modify Bolt Model & add Filler Block	08-08-06	G.L.
R03	Issue for production	25-04-06	G.L.

Vanair Inc.
 880, Marie-Victorin
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 www.heliotowcart.com

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Matrice / Matrie: _____

TOLERANCES

1/32" ± 1/32"
 1/16" ± 0.005"
 1/8" ± 0.005"
 ANGLE ± 1°

PROJECTION

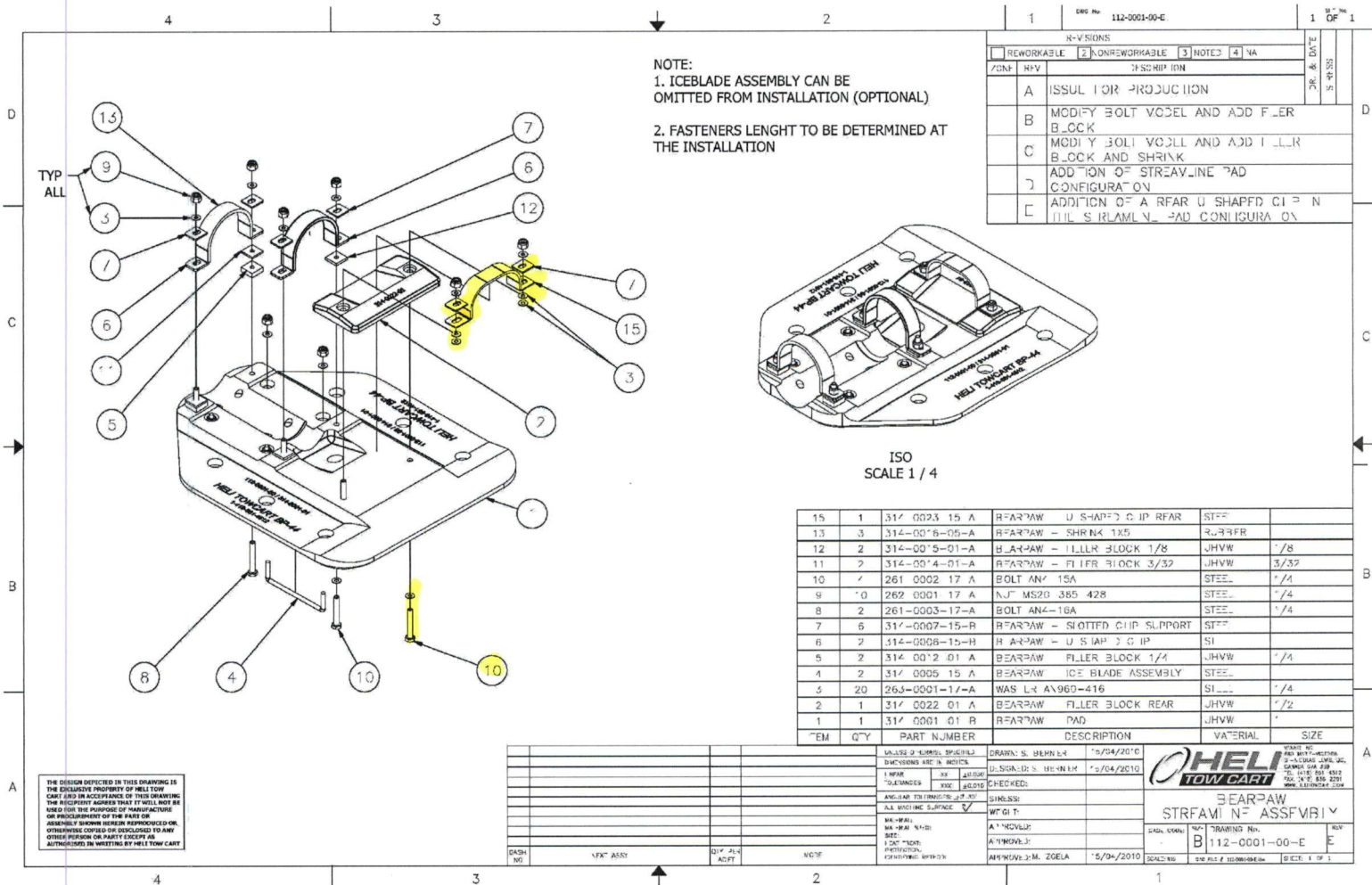
Titre / Title
 Bearpaw Assembly

Designé par / Drawn by: G. Lapointe
 Vérifié par / Checked by: _____
 Approuvé par / Approved by: _____

Date: (yyyy-mm-dd)
 2006-04-25

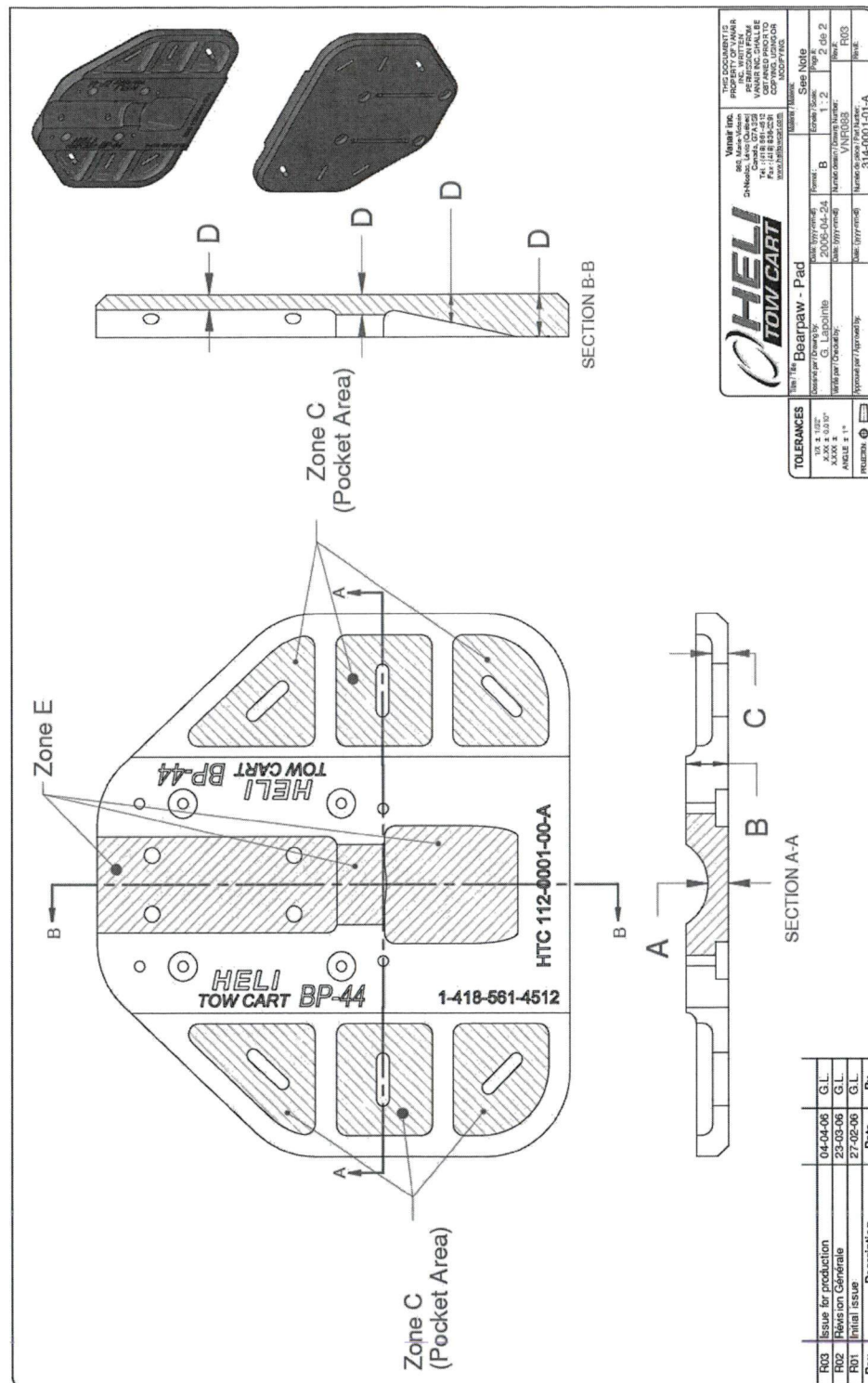
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 Numéro de pièce / Part Number: 112-0001-00-C

Page: 1 de 1
 Rev: R05



Annex B

BearPaw Pad Allowable Damage Drawing, Drawing no. 314-0001-01-A (VNR088), Page 2 of 2
BearPaw Streamline Allowable Damage Drawing, Drawing no. 314-0001-01-B, Page 3 of 3







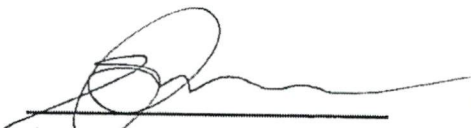
Master Document List

Helitowcart Inc.

Robinson R44 Helicopters Installation of BearPaw Model BP44

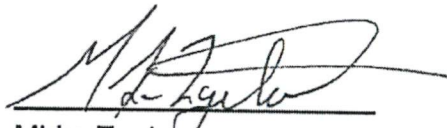
Report: HTC-MDL-BP-R44-1000 (Rev C)

PREPARED BY:


Simon Bernier
Staff Specialist - Structures

DATE: APR 15, 2010

APPROVED BY:


Mirko Zgela
Design Approval Representative DAR #310

DATE: APR 15, 2010

Revision	Revision Date	Revision of Entry	Entered by
C	2010 04 15	Addition of a rear U shaped clip in the streamline BearPaw Pad configuration	S. Bernier
B	2009 10 22	Introduction of new streamline BearPaw Pad configuration as alternate	S. Bernier
A	2006 09 07	Drawings are added to include the provision of shims during the installation.	N. Barbeau



1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-R44-1000	Compliance Plan - Robinson R44 Helicopters - Installation of Bear Paw Model BP44	NC	DAR 310	July 4, 2006
314-0011-00	BearPaw Model BP44 – Installation Instructions - R44	D	DAR 310	Apr 15, 2010
AAC-STR-BP-R44-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP44	NC	DAR 310	July 4, 2006
AAC-FTR-C-FBLO	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Aug 4, 2006
HTC-TM-BP-R44-1000	Structural Substantiation - BearPaw Streamline BP44	NC	DAR 310	Oct 22, 2009
ATS-EO-BP-R44-1000	Engineering Order - BearPaw Streamline BP44	NC	DAR 310	Apr 15, 2010

2.0 MASTER DRAWINGS

Drawings # / P/N	Title	Revision Status	Approval by	Date
112-0001-01-C	BearPaw Assembly	C	DAR 310	Sept 6, 2006
112-0001-01-E	BearPaw Streamline Assembly	E	DAR 310	Apr 15, 2010
314-0002-15-A	BearPaw – Iceblade	A	DAR 310	Apr 24, 2006
314-0004-15-A	BearPaw – Iceblade Threaded Rod	A	DAR 310	Apr 24, 2006
314-0005-15-A	BearPaw – Iceblade Assembly	A	DAR 310	Apr 24, 2006
314-0001-01-A	BearPaw - Pad	A	DAR 310	Apr 24, 2006
314-0001-01-B	BearPaw – Pad Streamline	B	DAR 310	Oct 22, 2009
314-0006-15-B	BearPaw – U Shaped Clip	B	DAR 310	July 31, 2006
314-0023-15-A	BearPaw – Low U Shaped Clip	A	DAR 310	Apr 15, 2010
314-0007-15-B	Bearpaw – Slotted Clip Support	B	DAR 310	July 31, 2006
314-0012-01-A	Filler Block 1/4"	A	DAR 310	Aug 8, 2006
314-0014-01-A	Filler Block 3/32"	A	DAR 310	Sept 6, 2006
314-0015-01-A	Filler Block 1/8"	A	DAR 310	Sept 6, 2006
314-0022-01-A	Filler Block Rear	A	DAR 310	Oct 22, 2009



3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01-A	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01-A	Propriétés du UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05-A	Heat Shrink Specifications	A	N/A	Sept 6, 2006

Master Document List

Helitowcart Inc.

Robinson R44 Helicopters Installation of BearPaw Model BP44

Report: HTC-MDL-BP-R44-1000 (Rev B)

PREPARED BY:


Simon Bernier
Staff Specialist - Structures

DATE: OCT 22, 2009

APPROVED BY:


Mirko Zgela
Design Approval Representative DAR #310

DATE: OCT 22, 2009

Revision	Revision Date	Revision of Entry	Entered by
B	2009 10 22	Introduction of new streamline BearPaw Pad configuration as alternate	S. Bernier
A	2006 09 07	Drawings are added to include the provision of shims during the installation.	N. Barbeau

1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-R44-1000	Compliance Plan - Robinson R44 Helicopters - Installation of Bear Paw Model BP44	NC	DAR 310	July 4, 2006
314-0011-00-A	BearPaw Model BP44 – Installation Instructions - R44	C	DAR 310	Oct 22, 2009
AAC-STR-BP-R44-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP44	NC	DAR 310	July 4, 2006
AAC-FTR-C-FBLO	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Aug 4, 2006
HTC-TM-BP-R44-1000	Structural Substantiation - BearPaw Streamline BP44	NC	DAR 310	Oct 22, 2009

2.0 MASTER DRAWINGS

Drawings # / P/N	Title	Revision Status	Approval by	Date
112-0001-01-C	BearPaw Assembly	C	DAR 310	Sept 6, 2006
112-0001-01-D	BearPaw Streamline Assembly	D	DAR 310	Oct 22, 2009
314-0002-15-A	BearPaw – Iceblade	A	DAR 310	Apr 24, 2006
314-0004-15-A	BearPaw – Iceblade Threaded Rod	A	DAR 310	Apr 24, 2006
314-0005-15-A	BearPaw – Iceblade Assembly	A	DAR 310	Apr 24, 2006
314-0001-01-A	BearPaw - Pad	A	DAR 310	Apr 24, 2006
314-0001-01-B	BearPaw – Pad Streamline	B	DAR 310	Oct 22, 2009
314-0006-15-B	BearPaw – U Shaped Clip	B	DAR 310	July 31, 2006
314-0007-15-B	Bearpaw – Slotted Clip Support	B	DAR 310	July 31, 2006
314-0012-01-A	Filler Block 1/4"	A	DAR 310	Aug 8, 2006
314-0014-01-A	Filler Block 3/32"	A	DAR 310	Sept 6, 2006
314-0015-01-A	Filler Block 1/8"	A	DAR 310	Sept 6, 2006
314-0022-01-A	Filler Block Rear	A	DAR 310	Oct 22, 2009

3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01-A	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01-A	Propriétés du UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05-A	Heat Shrink Specifications	A	N/A	Sept 6, 2006



314-0011-00 Rev D
BearPaw Model BP44
Installation Instructions - R44

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Annex B (BearPaw Pad Allowable Damage Drawing)	

INTRODUCTION

Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw for your Robinson R44.

General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance to your Robinson helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

Table 1 – Helitowcart Customer Support

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-2291 info@helitowcart.com

Helicopter Effectivity

This installation instruction applies to the following ROBINSON Helicopters:

Table 2 – Robinson Helicopter Effectivity

A/C Model	Serial no.	Type Certificate Data Sheet
R44	0271 thru 9999	H11NM
R44 II	1140, 10001 and subsequent	H11NM

Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

INSTALLATION

BearPaw Installation

Reference Documentation:

- [1] Robinson R44 - Maintenance Manual & Instruction for Continued Airworthiness. RTR460.
- [2] Annex A – BearPaw Assembly Drawings (112-0001-00-C & 112-0001-00-E)

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);
- Remove aft skid wearshoe & re-install the attaching screws.

Step 2: BearPaw Preparation

- With IceBlade Option: Install ice blades (Qty:2) under BearPaw pad as per drawing (112-0001-00) Ref [2];
- With IceBlade Option: Insert washer (Washer P/N 263-0001-17) through threaded part of the ice blade and secure with nut (P/N 262-0001-17);
- Position the BearPaw under skid at the aft intersection with the cross tube as per figure 1 with narrow edge pointing forward.

Step 3: BearPaw Set Up

- Insert washers (P/N 263-0001-17) through all four front bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert bolts(P/N261-0002-17) & (261-0003-17) and washer (P/N 263-0001-17) through BearPaw pad as per drawing (112-0001-00) Ref [2]
- If Streamline model, then apply step 3.1. See step 3.1 described below.
- Position the BearPaw pad under the skid
- Insert small filler blocks (P/N314-0012-01) & (P/N314-0014-01) at front of BearPaw& Insert filler blocks (P/N314-0015-01) at center of BearPaw as per drawing (112-0001-00) Ref [2];
- The use of filler blocks mentioned above may be increased, decreased, replaced or complemented by the use of washers (P/N 263-0001-17). Bolts (P/N261-0002-17) & (261-0003-17) may be replaced by longer or shorter AN4 bolts as required.
- Insert both U-shaped clips (P/N 314-0006-15) through bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert slotted clip supports (P/N 314-0007-15) through all four bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb.

Step 3.1: With the Streamline Version of the Bearpaw (P/N 112-0001-00-E)

- Insert washers (P/N 263-0001-17) through bolts (P/N261-0002-17)
- Insert bolts (P/N261-0002-17) and washer (P/N 263-0001-17) through the rear BearPaw pad as per drawing (112-0001-00-E) Ref [2]
- Insert rear filler block (P/N 314-0022-01) at the rear of BearPaw as per drawing (112-0001-00-E) Ref [2];
- Insert two washers (P/N 263-0001-17) per bolts (P/N261-0002-17) (four washers total)
- Insert Low U-shaped clip (P/N 314-0023-15) through bolts: (P/N261-0002-17) as per drawing (112-0001-00-E) Ref [2];
- Insert slotted clip supports (P/N 314-0007-15) through bolts. Position slotted clip supports with rounded edge toward helicopter skid;

- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Bolts (P/N261-0002-17) may be replaced by longer or shorter AN4 bolts as required. Max. torque on nuts 60 in.-lb.

Step 4: Final Step

- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

Figure 1 - Installed BearPaw Model BP44 (112-0001-00-C)

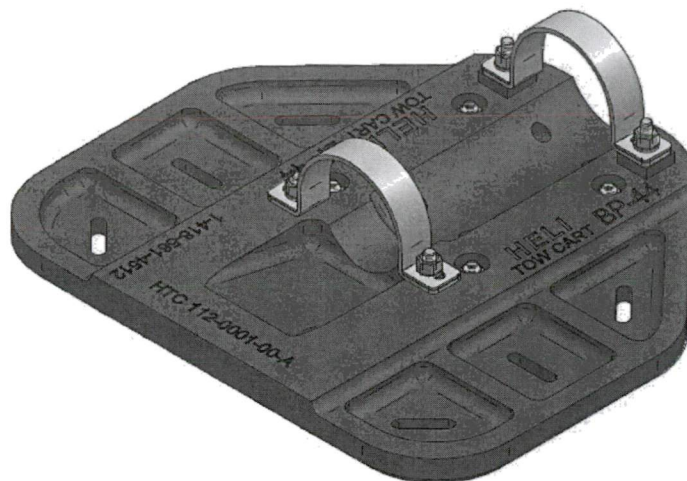
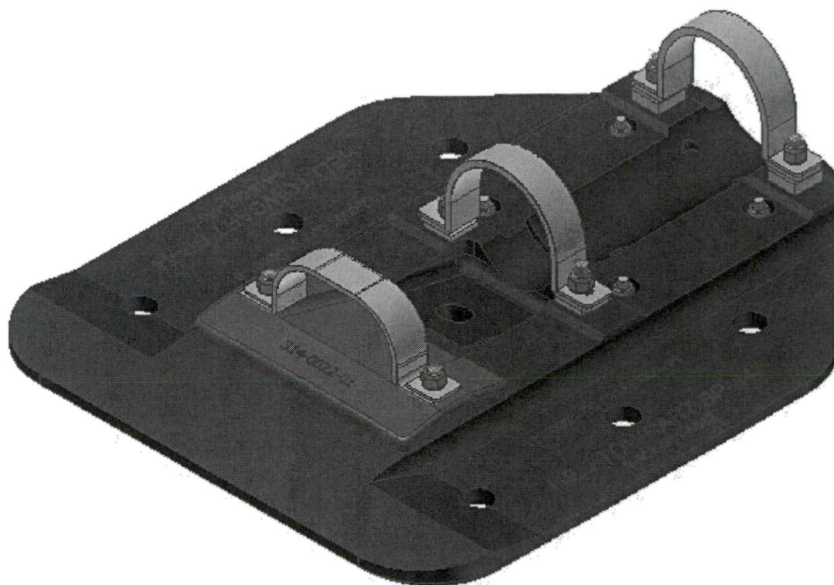


Figure 2 - BearPaw Model BP44 Streamline (112-0001-00-E)



BearPaw Removal

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15) and U-shaped clips (P/N 314-0006-15);
- With the Streamline Version of the Bearpaw (P/N 112-0001-00-E) remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15) and rear U-shaped clips (P/N 314-0023-15);
- Remove BearPaw pad (P/N 314-0001-01);
- Inspect skid tubes to confirm serviceability;
- Re-install aft wearshoe with screws as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required.

Weight & Balance

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

Table 3 – Weight & Balance Data

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP44	5.9 Lb 2.7 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	758.1 in-lb 8.8 m-kg
Helitowcart BearPaw Model BP44 - Streamline	7.0 Lb 3.2 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	889.5 in-lb 10.4 m-kg

Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

Table 4 – Parts List

Description	Qty	Part No.	Name (Drawing no.)
BearPaw Model BP44	1	112-0001-00	112-0001-00-C / BearPaw Assembly 112-0001-00-E / BearPaw Streamline Assembly
BearPaw pad	1	314-0001-01	314-0001-01-A / BearPaw – Pad (VNR088) 314-0001-01-B / BearPaw – Pad Streamline
Low U Shaped Clips	1	314-0023-15	BearPaw - Low U Shaped Clips
U Shaped Clips	2	314-0006-15	BearPaw - U Shaped Clips (VNR087)
Slotted Clip Support	6	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks rear	1	314-0022-01	BearPaw – Filler block Rear
Filler blocks 1/4"	2	314-0012-01	BearPaw – Filler block 1/4" (VNR099)
Filler blocks 3/32"	2	314-0014-01	BearPaw – Filler block 3/32" (VNR103)
Filler blocks 1/8"	2	314-0015-01	BearPaw – Filler block 1/8" (VNR104)
Bolts	2 *(+2)	261-0002-17	Bolt- AN4-15 *Note: for Streamline Assembly
Bolts	2	261-0003-17	Bolt- AN4-16
Nuts	4 *(+2)	262-0001-17	Nut- MS20-365-428 *Note: +2 for Streamline Assembly
Washers	8 *(+8)	263-0001-17	Washer – AN960-416 *Note: +8 for Streamline Assembly
Shrink	3	314-0016-00	BearPaw – Shrink Specifications & Installation
IceBlade Option Model OIB	2	314-0005-15	VNR086 / IceBlade Assembly
Nuts	4	262-0001-17	Nut- MS20-365-428
Washers	4	263-0001-17	Washer – AN960-416

INSPECTION

Life Limited Items

There are no life limited items for the Helitowcart BearPaw.

Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:
 Table 5 – Tolerances for cracks & wear;
 Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2) or
 Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 300 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the R44 landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 300 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

300 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:
 Table 5 – Tolerances for cracks & wear;
 Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2); or
 Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

Table 5 – Tolerances for Cracks & Wear

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,350	0,050	
B	1,000	0,250	
C	0,375	0,075	<u>Stiffeners:</u> NO cracks in stiffeners. <u>Pockets:</u> Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,350	0,050	

E	N/A	N/A	No cracks allowed in zone E
F	0,350	0,050	<u>For P/N 314-0001-01-B Only</u>
G	0,75	0,050	<u>For P/N 314-0001-01-B Only</u>

Overhaul Requirements

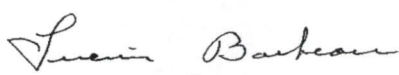
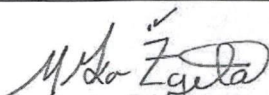
- Not applicable for the designated application of this device.

REVISIONS & APPROVAL

Revisions

Date	Rev	Nature of Revisions
April 15, 2010	D	Addition of a rear U shaped clip in the Streamline BearPaw Pad configuration.
October 22, 2009	C	Introduction of new streamline BearPaw Pad configuration as alternate.
September 7, 2006	B	- Added filler blocks and heat shrink to product list. - Modified recommended bolt models (lengthened) - Revised inspection requirements from 100 hour to 300 hour intervals. - Identification of the IceBlade assembly as an optional feature.
June 12, 2006	A	Initial issue

Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	April 15, 2010
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	April 15, 2010

Annex A

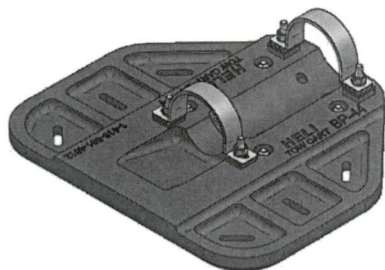
See: BearPaw Assembly, drawing no. 112-0001-00-C
 BearPaw Streamline Assembly, drawing no. 112-0001-00-E

Annex B

See: BearPaw Pad Allowable Damage Drawing, drawing no. 314-0001-01-A (VNR088) page 2 of 2.
 BearPaw Streamline Allowable Damage Drawing, drawing no. 314-0001-01-B page 3 of 3)

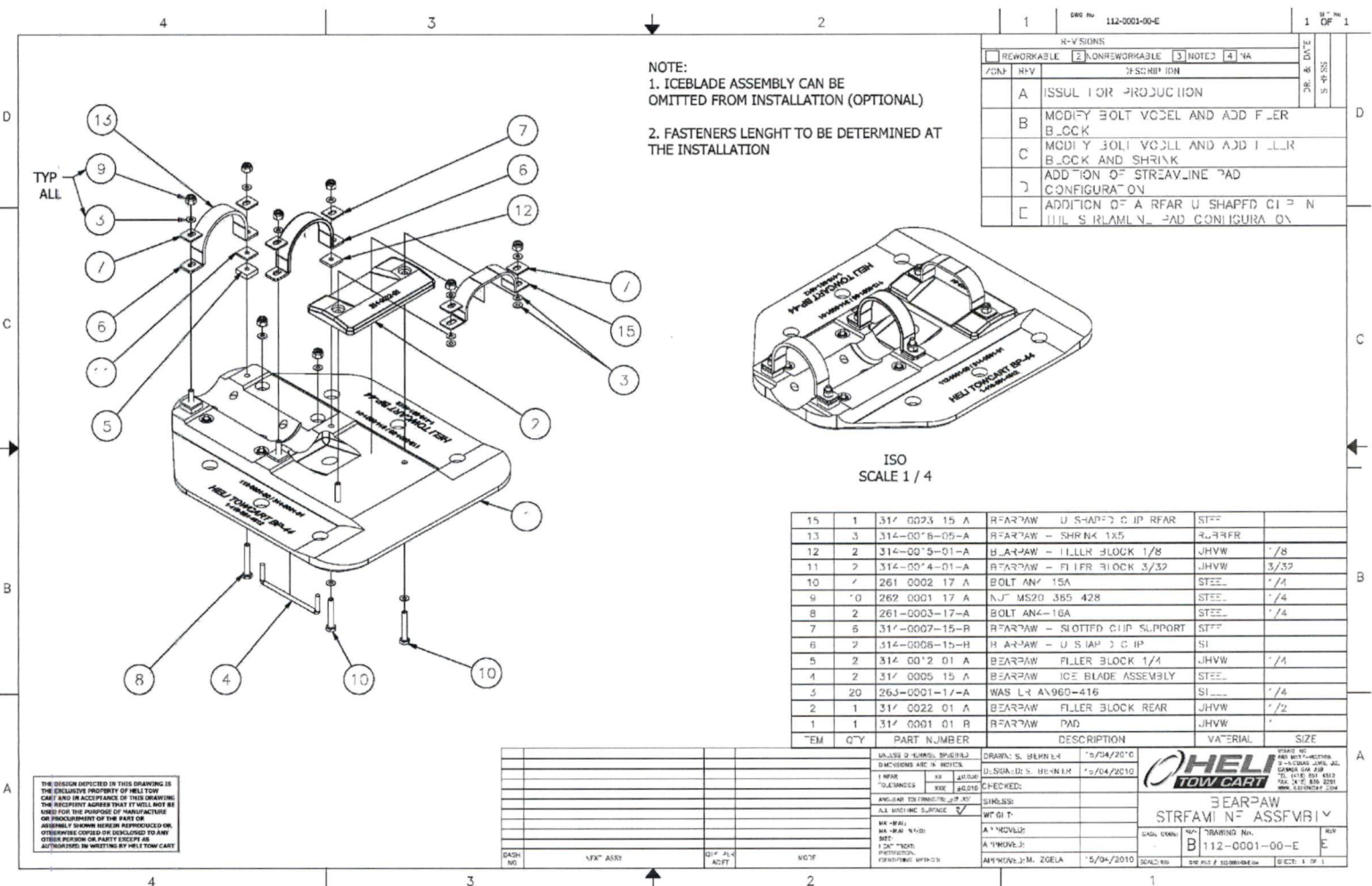
Annex A

BearPaw Assembly, Drawing no. 112-0001-00-C
BearPaw Streamline Assembly, Drawing no. 112-0001-00-E



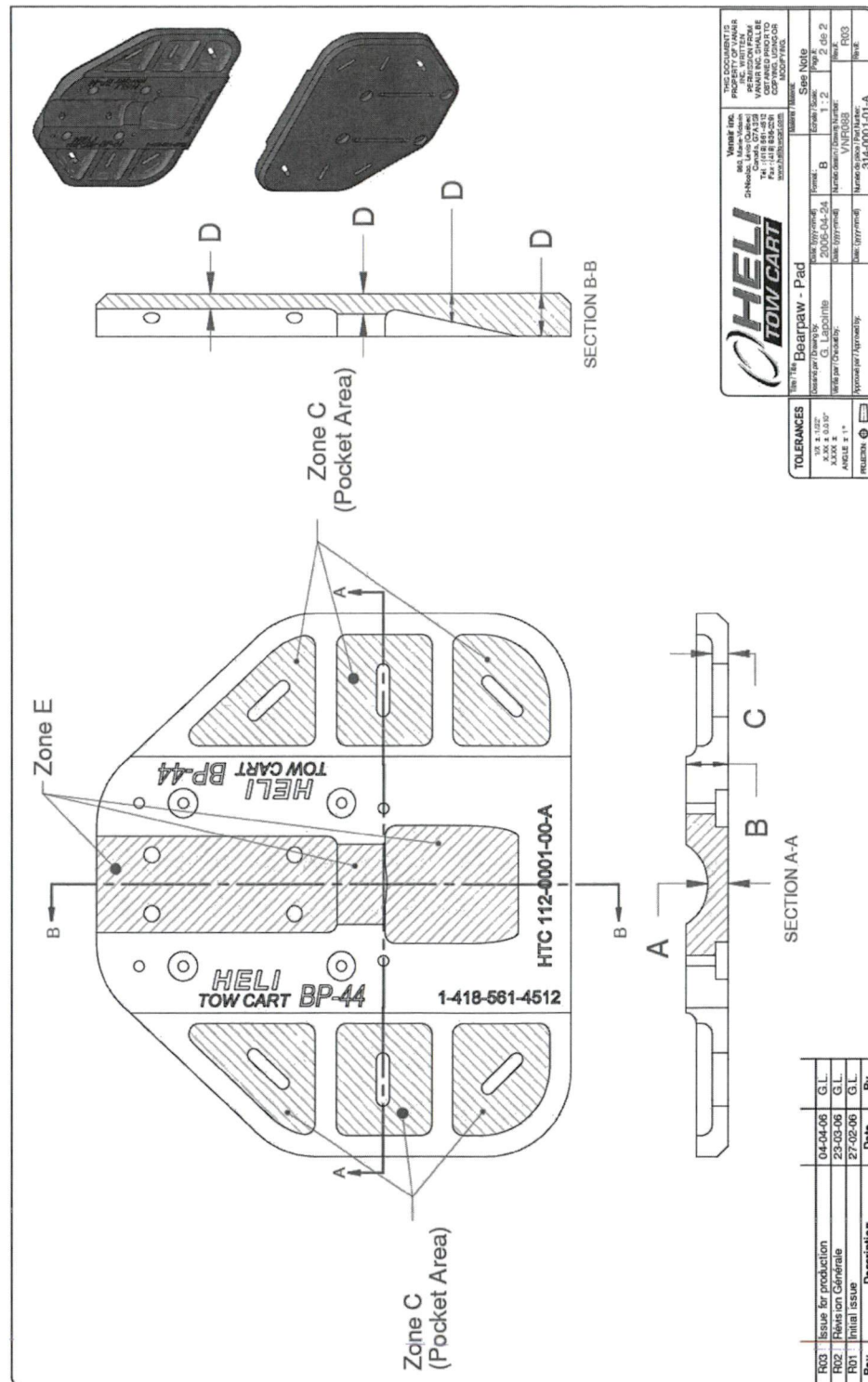
NOTE : Iceblade assembly can be omitted from installation (Optional)

	Vanair Inc. 880, Marie Robitaille St-Norbert, Lével (Québec) Canada, Q7A 5V5 Tel : (418) 886-4012 Fax : (418) 838-2531 www.vanair.ca		THIS DOCUMENT IS THE PROPERTY OF VANAIR INC. WRITTEN REMOVAL FROM VANAIR MATERIALS ORDER AND PRIOR TO COPYING, LENDING OR MODIFYING.	
	Title / Titre Bearpaw Assembly		Measure / Mesure 	
Drawn by / Dessiné by G. Lapointe	Date / Date 2008-04-25	Format / Format VPNR03	ECU / ECU 1	Page / Page 1 of 1
Written by / Rédigé by 	Date / Date 	Number Design / Désignation VPNR03	ECU / ECU R05	Rev. / Rev.
Approved by / Approuvé by 	Date / Date 	Number Design / Désignation 112-0001-00-C		



Annex B

BearPaw Pad Allowable Damage Drawing, Drawing no. 314-0001-01-A (VNR088), Page 2 of 2
BearPaw Streamline Allowable Damage Drawing, Drawing no. 314-0001-01-B, Page 3 of 3







314-0011-00-A Rev C
BearPaw Model BP44
Installation Instructions - R44

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Annex B (BearPaw Pad Allowable Damage Drawing)	

INTRODUCTION

Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw for your Robinson R44.

General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance to your Robinson helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

Table 1 – Helitowcart Customer Support

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-2291 info@helitowcart.com

Helicopter Effectivity

This installation instruction applies to the following ROBINSON Helicopters:

Table 2 – Robinson Helicopter Effectivity

A/C Model	Serial no.	Type Certificate Data Sheet
R44	0271 thru 9999	H11NM
R44 II	1140, 10001 and subsequent	H11NM

Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

INSTALLATION

BearPaw Installation

Reference Documentation:

- [1] Robinson R44 - Maintenance Manual & Instruction for Continued Airworthiness. RTR460.
- [2] Annex A – BearPaw Assembly Drawing (112-0001-00)

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);
- Remove aft skid wearshoe & re-install the attaching screws.

Step 2: BearPaw Preparation

- With IceBlade Option: Install ice blades (Qty:2) under BearPaw pad as per drawing (112-0001-00) Ref [2];
- With IceBlade Option: Insert washer (Washer P/N 263-0001-17) through threaded part of the ice blade and secure with nut (P/N 262-0001-17);
- With the Streamline version of the Bearpaw (P/N 112-0001-00-D), install filler block (P/N 314-0022-01) with two bolts (P/N 261-0004-17), four washers (P/N 263-0001-17) and two nuts (P/N 262-0001-17) as per drawing (112-0001-00-D) Ref [2];
- Position the BearPaw under skid at the aft intersection with the cross tube as per figure 1 with narrow edge pointing forward.

Step 3: BearPaw Set Up

- Insert washers (P/N 263-0001-17) through all four bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert bolts(P/N261-0002-17) & (261-0003-17) and washer (P/N 263-0001-17) through BearPaw pad as per drawing (112-0001-00) Ref [2]
- Insert filler blocks (P/N314-0012-01) & (P/N314-0014-01) at front of BearPaw& Insert filler blocks (P/N314-0015-01) at rear of BearPaw as per drawing (112-0001-00) Ref [2];
- The use of filler blocks mentioned above may be replaced or complemented by the use of washers (P/N 263-0001-17). Bolts (P/N261-0002-17) & (261-0003-17) may be replaced by longer or shorter AN4 bolts as required.
- Insert both U-shaped clips (P/N 314-0006-15) through bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert slotted clip supports (P/N 314-0007-15) through all four bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb;
- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

Figure 1 - Installed BearPaw Model BP44

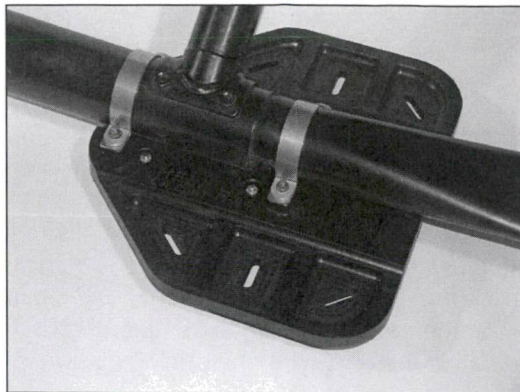
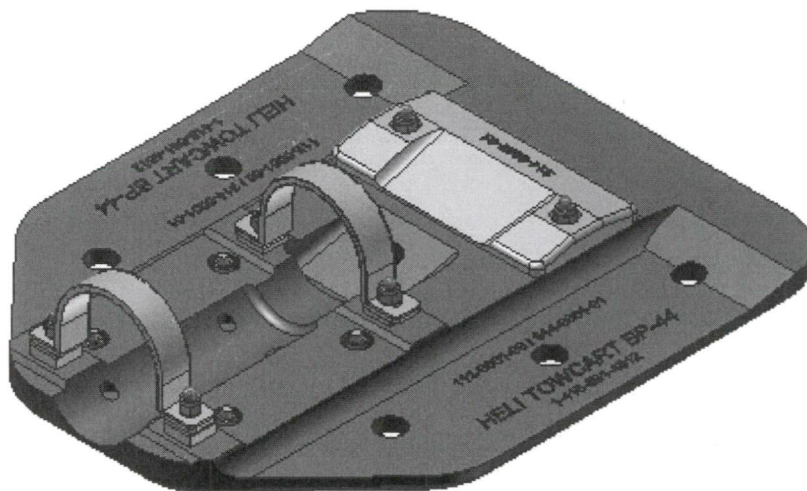


Figure 2 - BearPaw Model BP44 Streamline



BearPaw Removal

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15), U-shaped clips (P/N 314-0006-15) and remove BearPaw pad (P/N 314-0001-01);
- Inspect skid tubes to confirm serviceability;
- Re-install aft wearshoe with screws as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required.

Weight & Balance

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

Table 3 – Weight & Balance Data

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP44	5.9 Lb 2.7 Kg	0.0in. (0.0mm)	0.0lb-kG (0.0mm-kG)	128.5 in 3.26 m	758.1 in-lb 8.8 m-kG
Helitowcart BearPaw Model BP44 - Streamline	6.9 Lb 3.1 Kg	0.0in. (0.0mm)	0.0lb-kG (0.0mm-kG)	128.5 in 3.26 m	886.6 in-lb 10.1 m-kG

Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

Table 4 – Parts List

Description	Qty	Part No.	Name (Drawing no.)
BearPaw Model BP44	1	112-0001-00	112-0001-00-C / BearPaw Assembly 112-0001-00-D / BearPaw Streamline Assembly
BearPaw pad	1	314-0001-01	314-0001-01-A / BearPaw – Pad (VNR088) 314-0001-01-B / BearPaw – Pad Streamline
U Shaped Clips	2	314-0006-15	BearPaw - U Shaped Clips (VNR087)
Slotted Clip Support	4	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks	1	314-0022-01	BearPaw – Filler block Rear
Filler blocks 1/4"	2	314-0012-01	BearPaw – Filler block 1/4" (VNR099)
Filler blocks 3/32"	2	314-0014-01	BearPaw – Filler block 3/32" (VNR103)
Filler blocks 1/8"	2	314-0015-01	BearPaw – Filler block 1/8" (VNR104)
Bolts	2	261-0002-17	Bolt- AN4-15
Bolts	2	261-0003-17	Bolt- AN4-16
Bolts	2	261-0004-17	Bolt- AN4-13 *Note: for Streamline Assembly
Nuts	4 *(+2)	262-0001-17	Nut- MS20-365-428 *Note: +2 for Streamline Assembly
Washers	8 *(+4)	263-0001-17	Washer – AN960-416 *Note: +4 for Streamline Assembly
Shrink	2	314-0016-00	BearPaw – Shrink Specifications & Installation
IceBlade Option Model OIB	2	314-0005-15	VNR086 / IceBlade Assembly
Nuts	4	262-0001-17	Nut- MS20-365-428
Washers	4	263-0001-17	Washer – AN960-416

INSPECTION

Life Limited Items

There are no life limited items for the Helitowcart BearPaw.

Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:
 Table 5 – Tolerances for cracks & wear;
 Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2) or
 Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 300 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the R44 landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 300 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

300 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:
 Table 5 – Tolerances for cracks & wear;
 Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2); or
 Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

Table 5 – Tolerances for Cracks & Wear

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,350	0,050	
B	1,000	0,250	
C	0,375	0,075	<u>Stiffeners:</u> NO cracks in stiffeners. <u>Pockets:</u> Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,350	0,050	

E	N/A	N/A	No cracks allowed in zone E
F	0,350	0,050	<u>For P/N 314-0001-01-B Only</u>
G	0,75	0,050	<u>For P/N 314-0001-01-B Only</u>

Overhaul Requirements


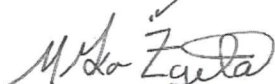
- Not applicable for the designated application of this device.

REVISIONS & APPROVAL

Revisions

Date	Rev	Nature of Revisions
October 22, 2009	C	Introduction of new streamline BearPaw Pad configuration as alternate.
September 7, 2006	B	<ul style="list-style-type: none"> - Added filler blocks and heat shrink to product list. - Modified recommended bolt models (lengthened) - Revised inspection requirements from 100 hour to 300 hour intervals. - Identification of the IceBlade assembly as an optional feature.
June 12, 2006	A	Initial issue

Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	October 22, 2009
External Approval :		
Transport Canada	 Mirko Zgela, DARI #310	October 22, 2009

Annex A

See: BearPaw Assembly, drawing no. 112-0001-00-C
 BearPaw Streamline Assembly, drawing no. 112-0001-00-D

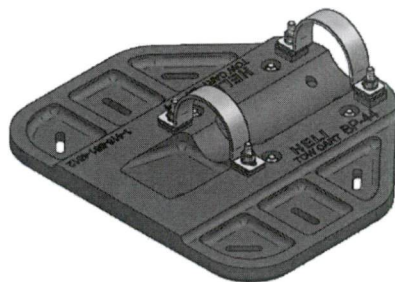
Annex B

See: BearPaw Pad Allowable Damage Drawing, drawing no. 314-0001-01-A (VNR088) page 2 of 2.
 BearPaw Streamline Allowable Damage Drawing, drawing no. 314-0001-01-B page 3 of 3)

Annex A

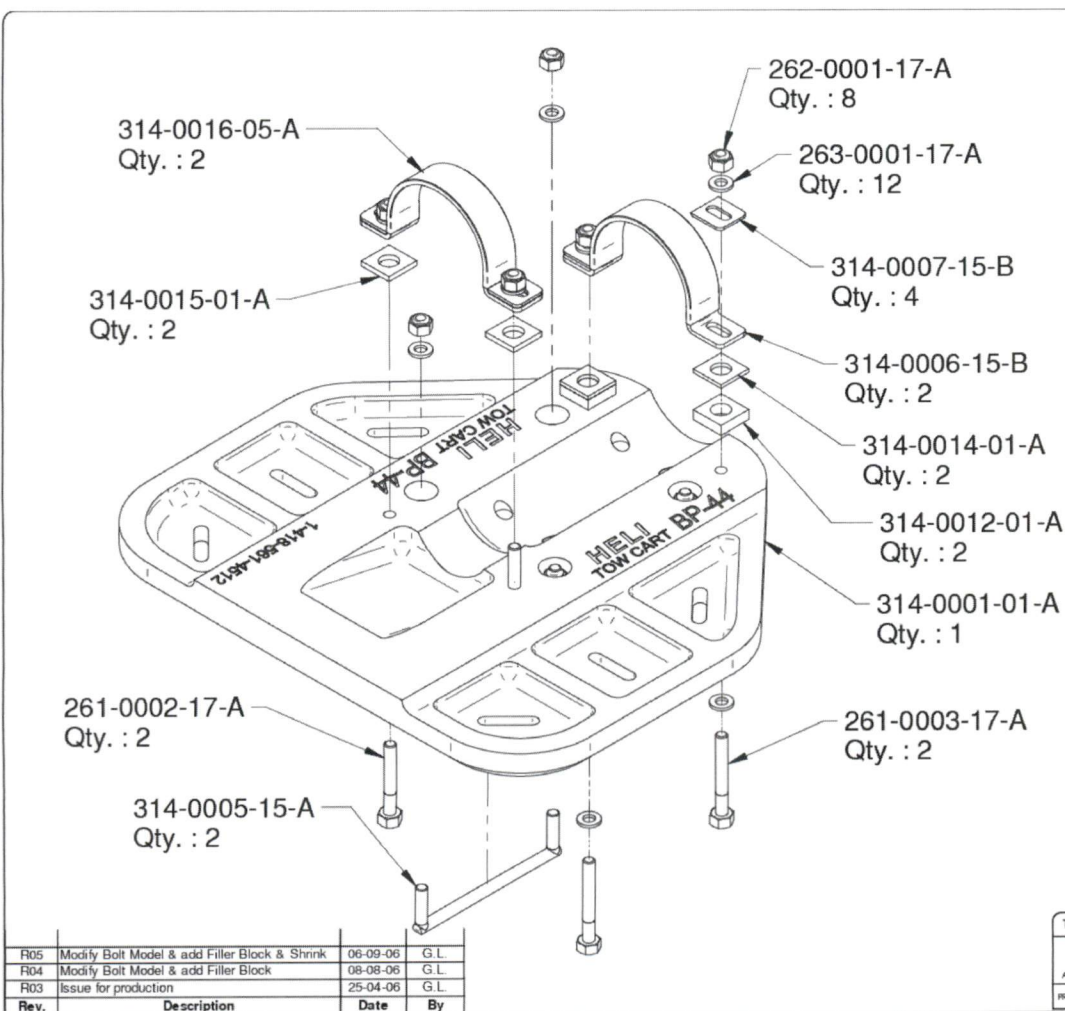
BearPaw Assembly, Drawing no. 112-0001-00-C
BearPaw Streamline Assembly, Drawing no. 112-0001-00-D

N°	Qty	Description	Part #
1*	1	Bearpaw - Pad	314-0001-01-A
2*	2	Bearpaw - Iceblade assembly	314-0005-15-A
3*	2	Bearpaw - U Shaped clip	314-0006-15-B
4*	4	Bearpaw - Slotted clip support	314-0007-15-B
5*	8	Nut MS20-365-428	262-0001-17-A
6*	12	Washer AN960-416	263-0001-17-A
7*	2	Bolt AN4-15A	261-0002-17-A
8*	2	Bearpaw - Filler Block 1/4"	314-0012-01-A
9*	2	Bolt AN4-16A	261-0003-17-A
10*	2	Bearpaw - Shrink 1"x5"	314-0016-05-A
11*	2	Bearpaw - Filler Block 1/8"	314-0015-01-A
12*	2	Bearpaw - Filler Block 3/32"	314-0014-01-A

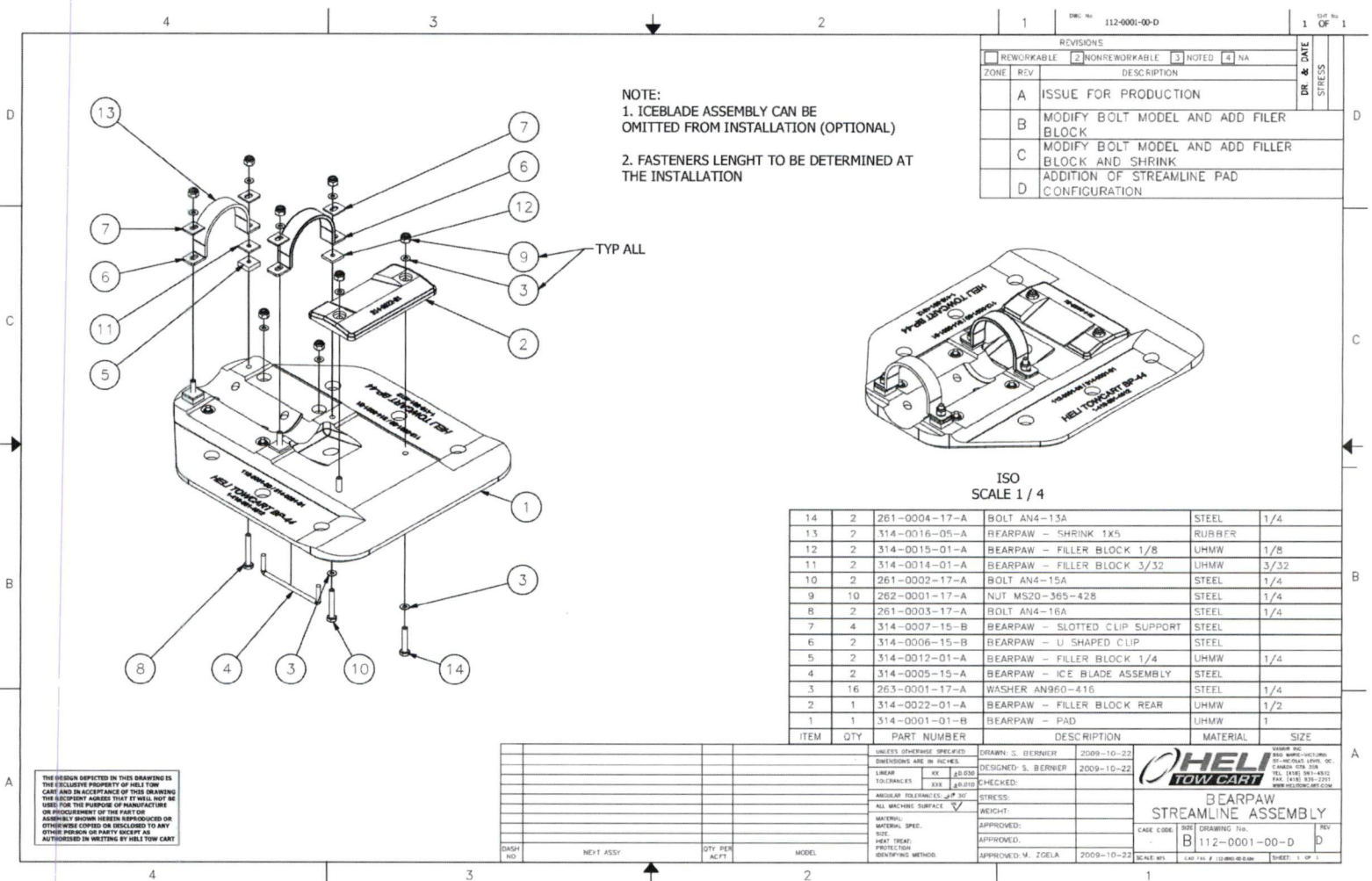


NOTE : Iceblade assembly can be omitted from installation (Optional)

TOLERANCES 1/16" ± 0.005" 1/32" ± 0.002" 1/64" ± 0.001" ANGLE ± 1°		HELI TOW CART Bearpaw Assembly		Vanair inc. 802, Marie-Victoria St-Nicolas, Lévis (Québec) Canada G3A 3S9 Tel : (418) 861-4512 Fax : (418) 836-0291 www.helipotential.com	THIS DOCUMENT IS PROPERTY OF VANAIR INC. WRITTEN REPRODUCTION FROM VANAIR INC. SHALL BE OBTAINED PRIOR TO COPYING, USING OR MODIFYING.
Désigné par / Drawing by G. Lapointe	Date (yyyy-mm-dd) 2006-04-25	Format B	Échelle / Scale N/A	Page 1 de 1	Révisé / Revision R05
Approuvé par / Approved by	Date (yyyy-mm-dd)	Numéro de pièce / Part Number 112-0001-00-C			

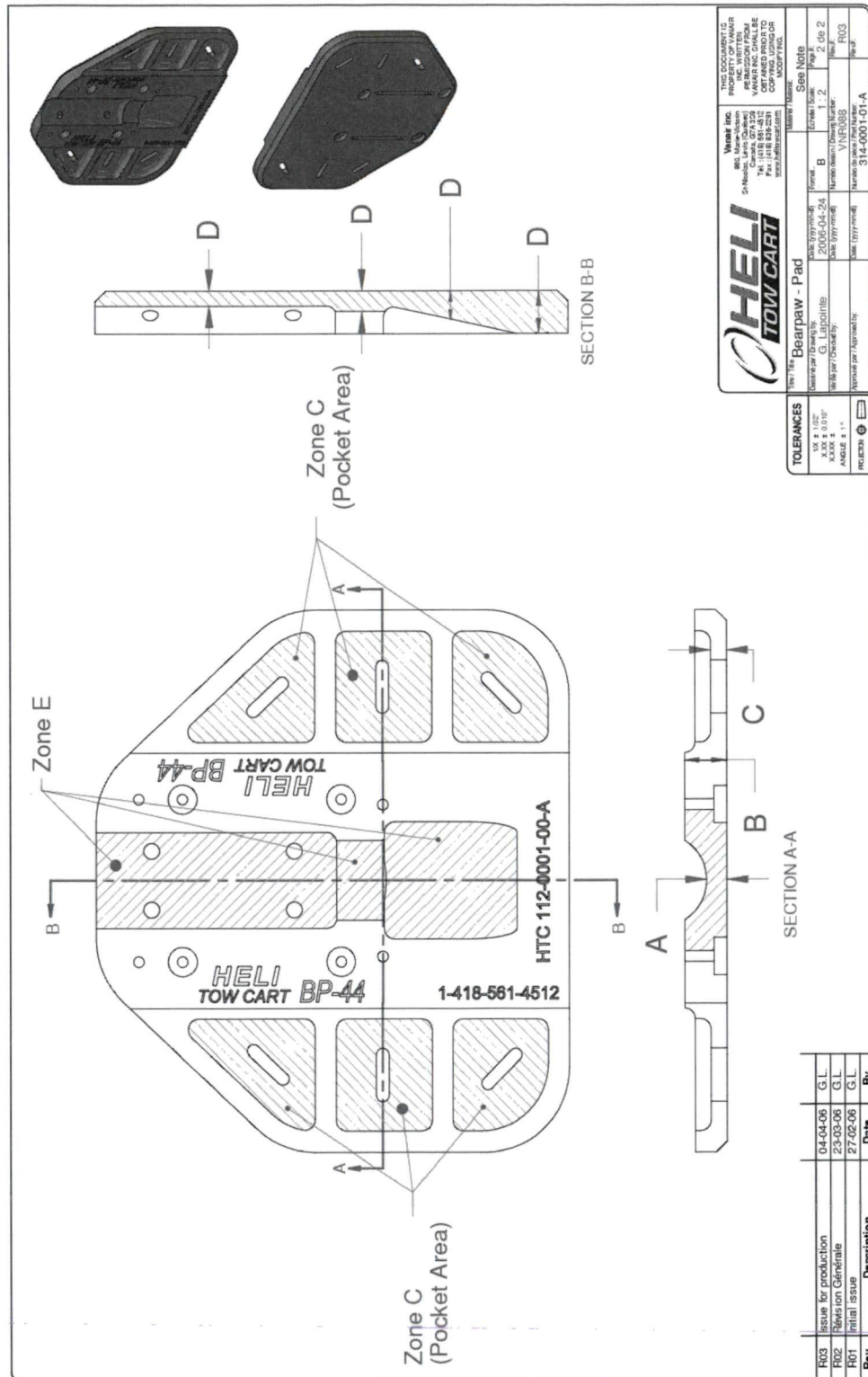


Rev.	Description	Date	By
R05	Modify Bolt Model & add Filler Block & Shrink	06-09-06	G.L.
R04	Modify Bolt Model & add Filler Block	08-08-06	G.L.
R03	Issue for production	25-04-06	G.L.

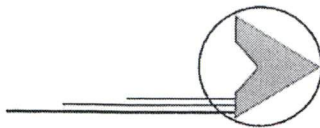


Annex B

BearPaw Pad Allowable Damage Drawing, Drawing no. 314-0001-01-A (VNR088), Page 2 of 2
BearPaw Streamline Allowable Damage Drawing, Drawing no. 314-0001-01-B, Page 3 of 3



Page 14 of 14

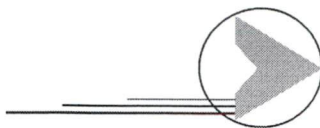


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Trois-Rivières, Québec
G9A 5E1

Engineering Order

Title: Engineering Order - BearPaw Streamline BP44				EO# ATS-EO-BP-R44-1000 Rev NC	
Prepared by: S. Bernier	Design: N/A	Mech: N/A	Stress: N/A	Approved: Mirko Zgela (DAR #310)	Date: Apr 15, 2010
A/C Effectivity R44 R44 II		Registration: N/A		Serial#: 0271 thru 9999 1140, 10001 and subsequent	
Reference Documents:					
<p>[1] Robinson R44 - Maintenance Manual & Instruction for Continued Airworthiness. RTR460</p> <p>[2] 314-0011-00-A Rev_D BearPaw Model BP44 - Installation Instructions - R44, dated April 15, 2010</p> <p>[3] AAC-STR-BP-R44-1000, Structural Substantiation - Helitowcart (Vanair Inc.) BearPaw Model BP44, dated July 4, 2006</p>					
Applicable Drawings:					
[4] 112-0001-00-E BearPaw Streamline Assembly					
Background:					
<p>The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance to your Robinson helicopter.</p>					
Description of Change:					
<p>The BearPaw Streamline Pad (P/N 314-0001001-B) is longer than the original design. An additional support is required to provide added support to the Pad in the unlikely event that a Pad would get stuck into the mud. Figures (1) shows the BearPaw Streamline assembly .</p>					



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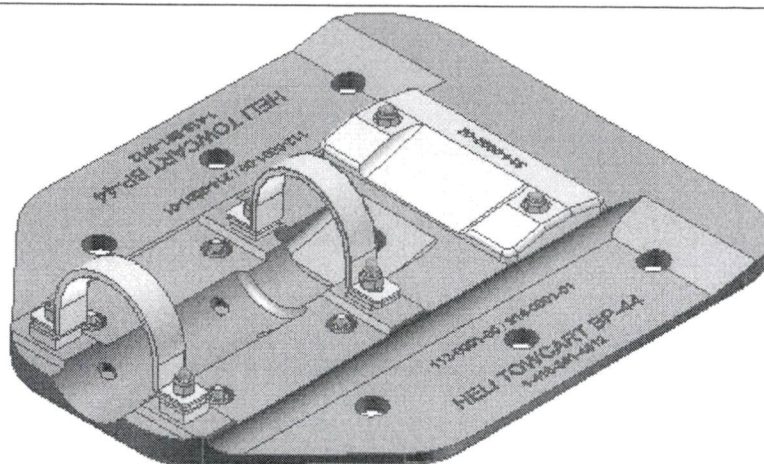


Figure 1 - BearPaw Streamline Assembly

New configuration:

As a preventive measure to reduce the bending moment and the load in the middle U clips during lift-off a U clip is added. Figure 2 shows the new assembly.

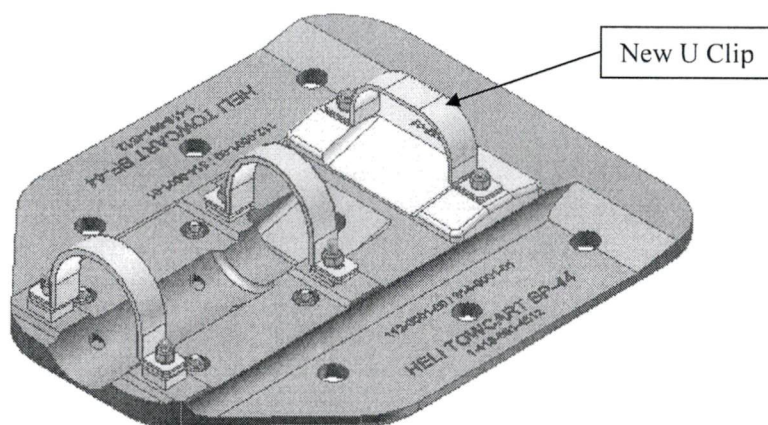
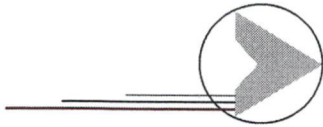


Figure 2 - BearPaw Streamline New Assembly

Structural Analysis:

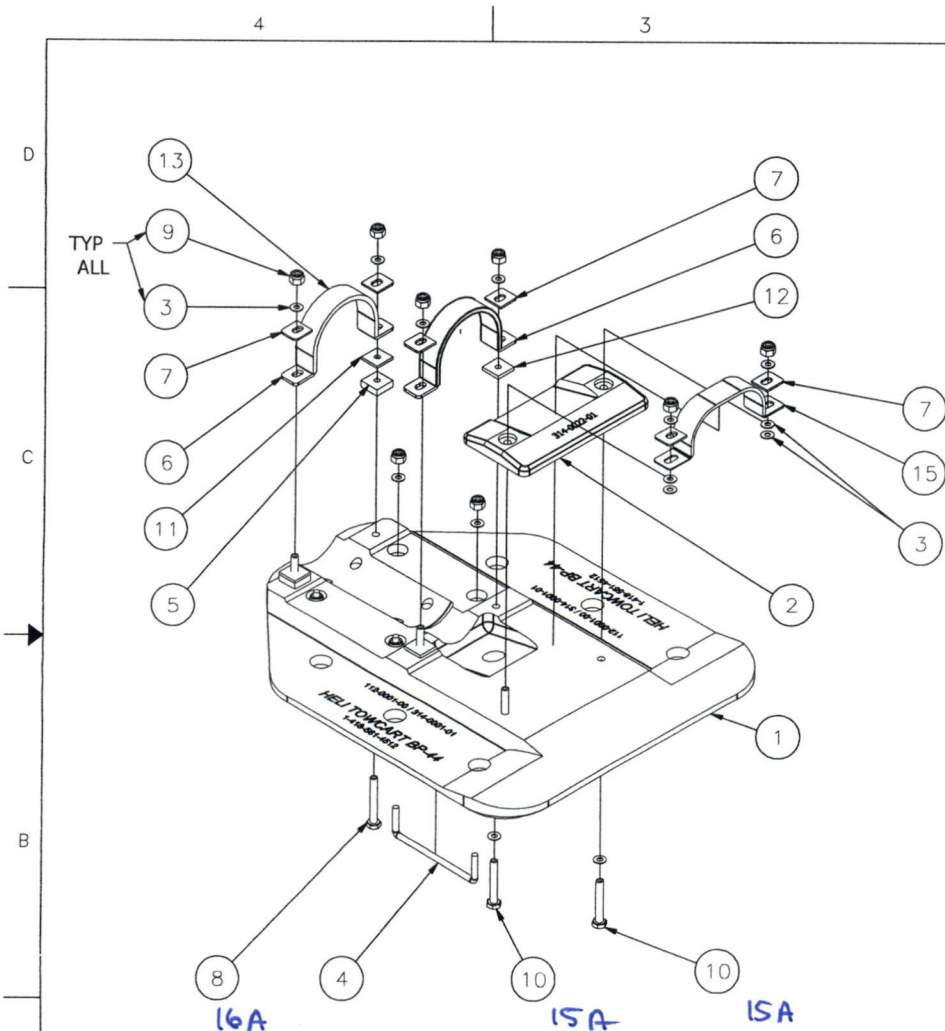
No additional structural analysis is needed since the two front U clips have proven to take the load during the landing in the document # AAC-STR-BP-R44-1000, Structural Substantiation – Helitowcart (Vanair Inc.) BearPaw Model BP44, dated July 4, 2006.



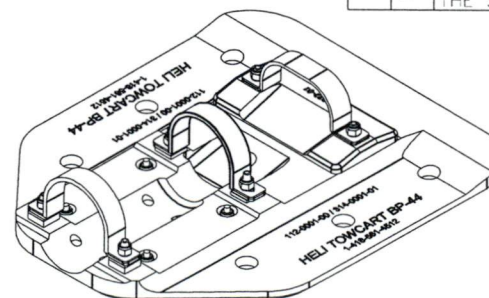
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G9A 5E1

Installation Instructions:	
1	Install the BearPaw Streamline assembly as per document #314-0011-00, Rev D, BearPaw Model BP44 – Installation Instructions - R44



NOTE:
1. ICEBLADE ASSEMBLY CAN BE OMITTED FROM INSTALLATION (OPTIONAL)
2. FASTENERS LENGTH TO BE DETERMINED AT THE INSTALLATION



1		112-0001-00-E	1 OF 1
REVISIONS			
CONF	REV	DESCRIPTION	DATE
	A	ISSUE FOR PRODUCTION	
	B	MODIFY BOLT MODEL AND ADD FILLER BLOCK	
	C	MODIFY BOLT MODEL AND ADD FILLER BLOCK AND SHRINK	
	D	ADDITION OF STREAMLINE PAD CONFIGURATION	
	E	ADDITION OF A REAR U SHAPED CLIP IN THE STREAMLINE PAD CONFIGURATION	

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SIZE
15	1	314 0023 15 A	BEARPAW U SHAPED CLIP REAR	STEEL	
13	3	314 0016 05 A	BEARPAW SHRINK 1X5	RUBBER	
12	2	314 0015 01 A	BEARPAW FILLER BLOCK 1/8	UHMW	1/8
11	2	314 0014 01 A	BEARPAW FILLER BLOCK 3/32	UHMW	3/32
10	4	261 0003 17 A	BOLT AN4 15A	STEEL	1/4
9	10	262 0001 17 A	NUT M520 365 4/8	STFFI	1/4
8	2	261 0003 17 A	BOLT AN4 16A	STEEL	1/4
7	6	314 0007 15 A	BEARPAW SLOTTED CLIP SUPPORT	STFFI	
6	2	314 0006 15 A	BEARPAW U SHAPED CLIP	STEEL	
5	2	314 0012 01 A	BEARPAW FILLER BLOCK 1/4	UHMW	1/4
4	2	314 0005 15 A	BEARPAW ICE BLADE ASSEMBLY	STEEL	
3	20	263 0001 17 A	WASHER AN960 416	STEEL	1/4
2	1	314 0022 01 A	BEARPAW FILLER BLOCK REAR	UHMW	1/2
1	1	314 0001 01 A	BEARPAW PAD	UHMW	

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

UNLESS OTHERWISE SPECIFIED:		UNLESS OTHERWISE SPECIFIED:	UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES		DESIGNED BY: S. BERNIER	10/04/2013
TOLERANCES:		CHECKED BY:	15/04/2013
FRACTIONS: 1/16, 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/8, 1 1/4, 1 1/2, 1 3/4, 2, 2 1/4, 2 1/2, 2 3/4, 3, 3 1/4, 3 1/2, 3 3/4, 4, 4 1/4, 4 1/2, 4 3/4, 5, 5 1/4, 5 1/2, 5 3/4, 6, 6 1/4, 6 1/2, 6 3/4, 7, 7 1/4, 7 1/2, 7 3/4, 8, 8 1/4, 8 1/2, 8 3/4, 9, 9 1/4, 9 1/2, 9 3/4, 10		STRESS:	
DECIMALS: 0.0005, 0.001, 0.002, 0.003, 0.004, 0.005, 0.006, 0.007, 0.008, 0.009, 0.01, 0.0125, 0.015, 0.0175, 0.02, 0.025, 0.03, 0.0375, 0.04, 0.05, 0.0625, 0.075, 0.0875, 0.1, 0.125, 0.15, 0.175, 0.2, 0.25, 0.3, 0.375, 0.4, 0.5, 0.625, 0.75, 0.875, 1, 1.25, 1.5, 1.75, 2, 2.5, 3, 3.75, 4, 5, 6, 7, 8, 9, 10		APPROVE:	
ALL MACHINING SURFACES: <input checked="" type="checkbox"/>		APPROVED BY: M. ZOF A	15/04/2013
WITH: MATERIAL SPEC: 1017		SCALE: NTS	1:1
HSA: 100%		DATE: 15/04/2013	
PROTECTIVE: 100%		SHEET: 1 OF 1	



BEARPAW
STREAMLINE ASSEMBLY

CAGE CODE	SIZE	GRAPHIC	REV
B	112-0001-00-E	E	

N. Barlow
2010.04.24

112-0001-00-E

1 OF 1

P. Barlow
2010-01-06

112-0001-00-D

4

3

2

1

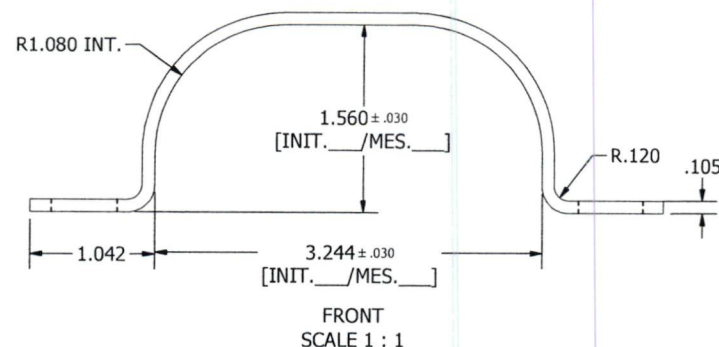
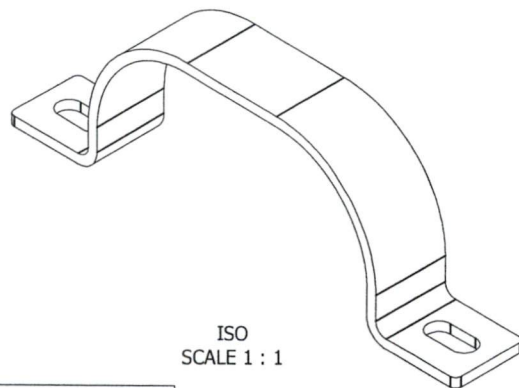
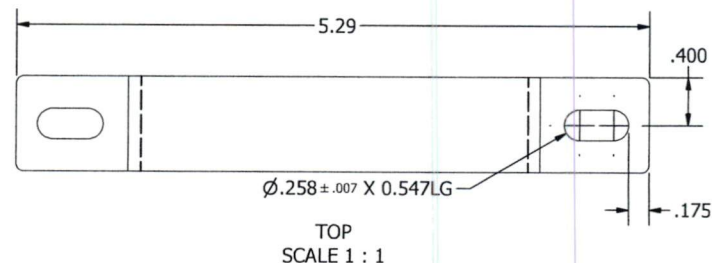
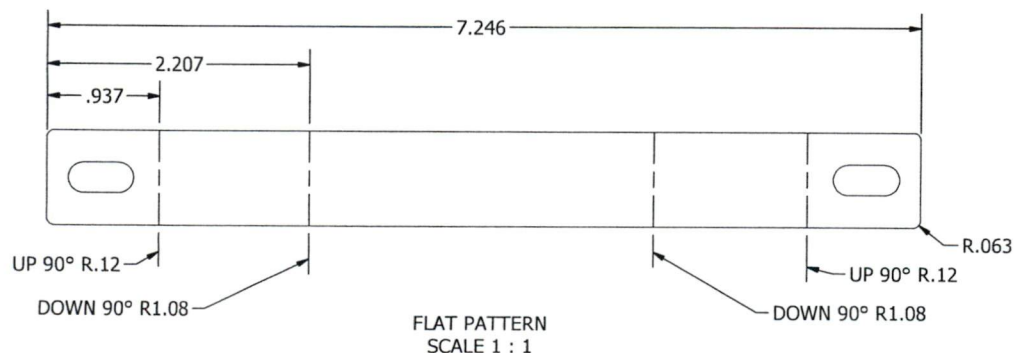
314-0023-15-A

1 OF 1

NOTES:

1. INTERPRET DRAWING IN ACCORDANCE WITH ANSI Y14.5M 1994. DIMENSIONS AND TOLERANCING
2. REMOVE ALL BURRS AND SHARP EDGES 1/64" MAX
3. FILL CLIENT INSPECTION FORM

REVISIONS				DATE	STRESS
ZONE	REV	DESCRIPTION			
	A	ISSUE FOR PRODUCTION			



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Helitowcart

Guide d'assemblage des BearPaws

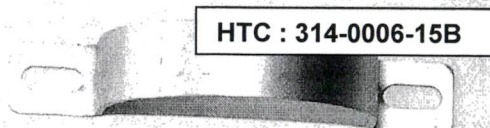

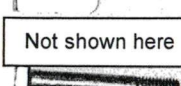




Liste de Distribution

Objet	No	Rev
*Assembly BP44 steamlined	*112-0001-00	*E <i>DP 2010.04.24</i>
Assembly BP44	VNR083	R05
Assembly BP350 with holes and cavities	112-0001-00	C
Assembly BP350 streamlined	112-0002-00	B
BearPaw Hardware components	112-0002-00-S	A
BearPaw Preparation & Packaging	314-0010-00	*H <i>DP 2010.04.24</i>
BearPaw BP44 / Heat Shrink Specs & Installation	314-0013-00	C
BearPaw BP44 / Heat Shrink Specs & Installation	314-0016-05	A
BearPaw BP350 / Heat Shrink Specs & Installation	314-0021-01	A

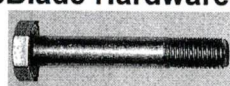


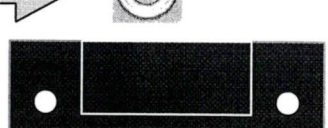


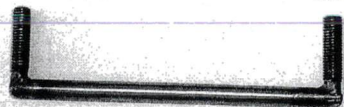
updated marked with ""

314-0010-00-H BearPaw Hardware components

BearPaw Hardware:

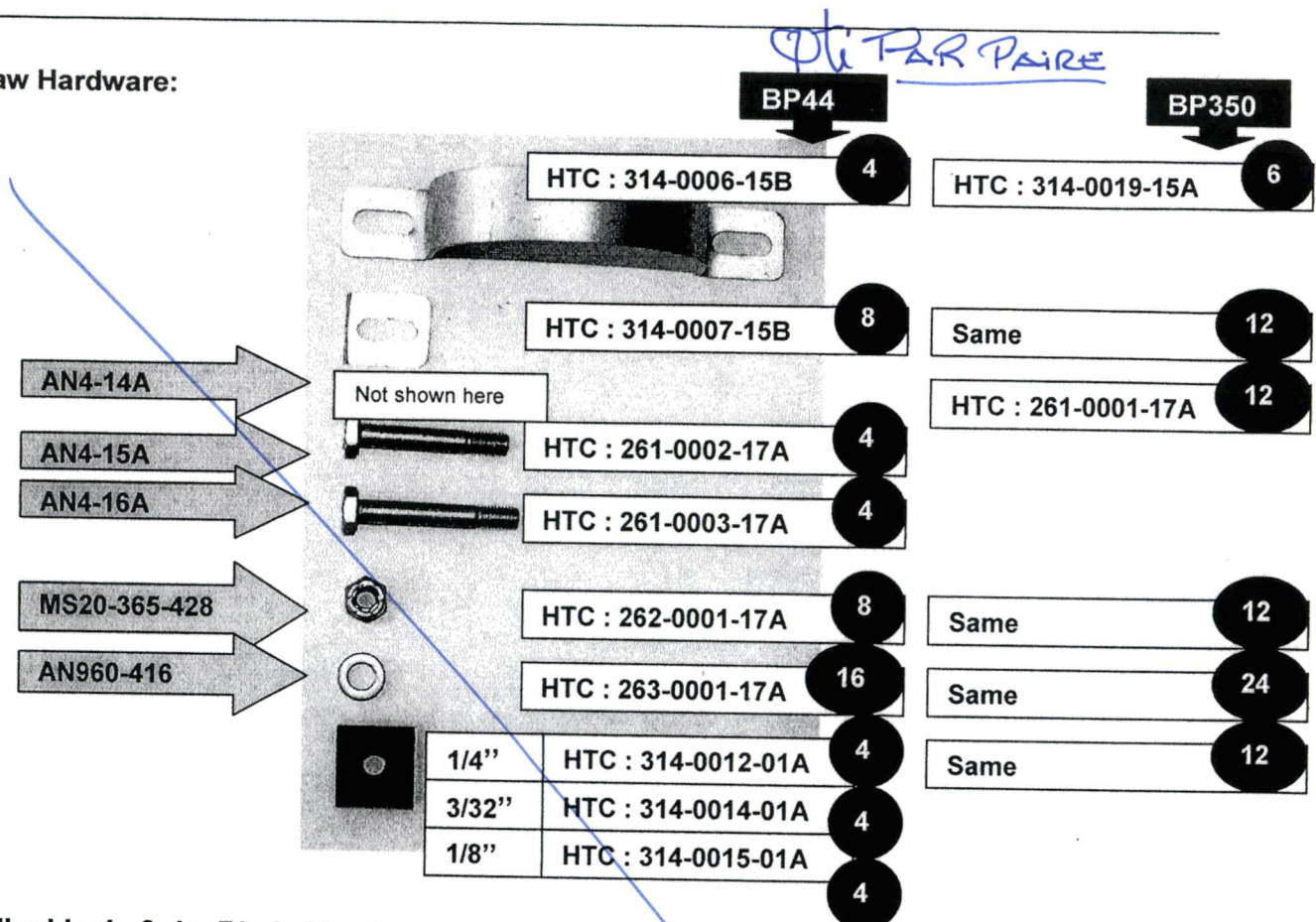
		BP44	Quantities per PAIR	BP350
		HTC : 314-0006-15B	4	HTC : 314-0019-15A 6
		HTC : 314-0007-15B	8	Same 12
AN4-14A		HTC : 261-0002-17A	4	HTC : 261-0001-17A 12
AN4-15A		HTC : 261-0003-17A	4	
AN4-16A		HTC : 262-0001-17A	8	Same 12
MS20-365-428		HTC : 263-0001-17A	16	Same 24
AN960-416		1/4" HTC : 314-0012-01A	4	Same 12
		3/32" HTC : 314-0014-01A	4	
		1/8" HTC : 314-0015-01A	4	

Rear Filler block & IceBlade Hardware:

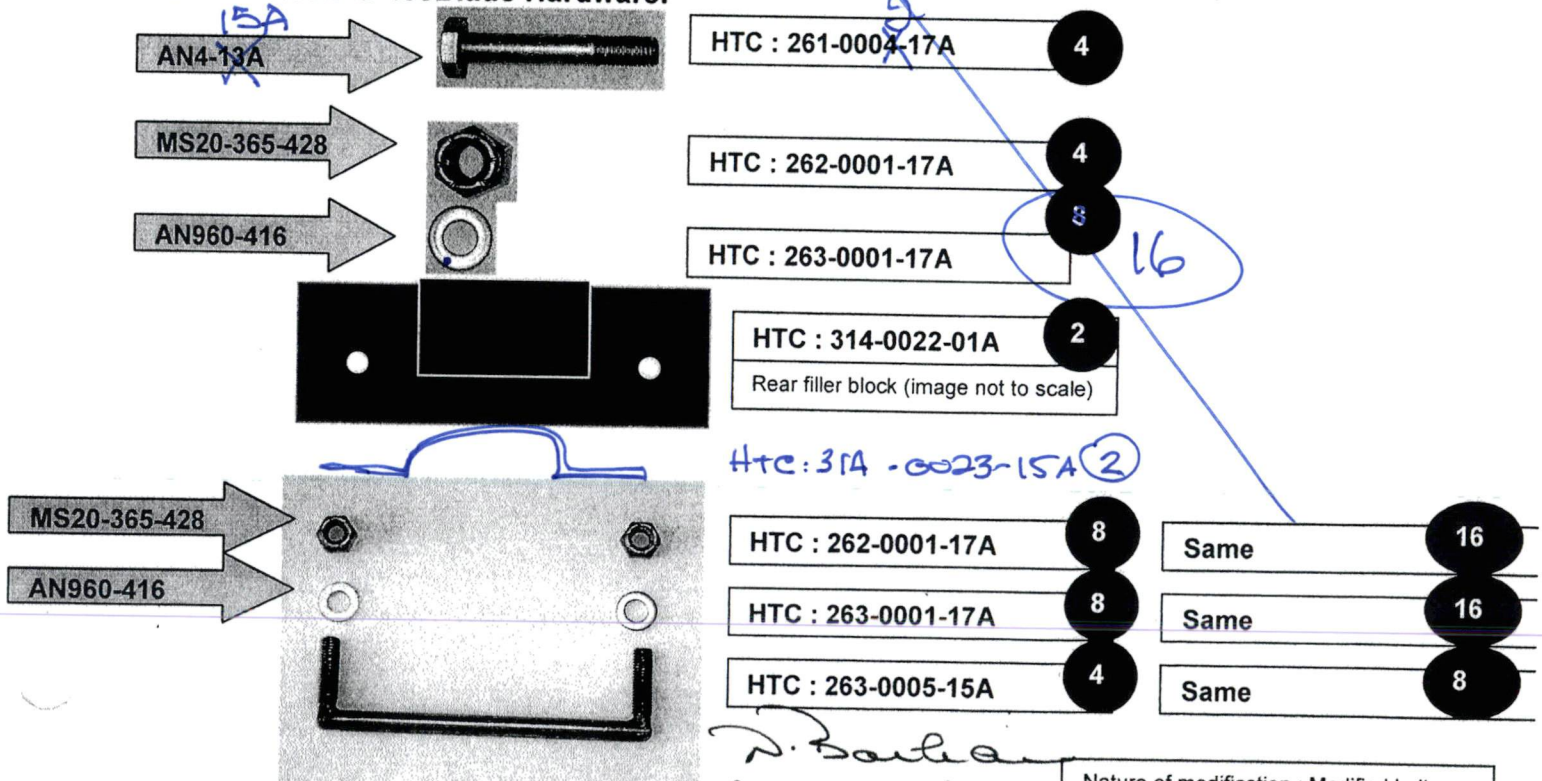
AN4-15A		HTC : 261-0002-17A	4	
MS20-365-428		HTC : 262-0001-17A	4	
AN960-416		HTC : 263-0001-17A	16	
		HTC : 314-0022-01A	2	
	LOW U-Clip (pict not avail)	HTC : 314-0023-15A	2	
MS20-365-428		HTC : 262-0001-17A	8	Same 16
AN960-416		HTC : 263-0001-17A	8	Same 16
		HTC : 263-0005-15A	4	Same 8

Nature of modification : Added Low U-Clip to BP44. increases washers too. Changed 13A bolt for 15A bolt at Rear Filler block.

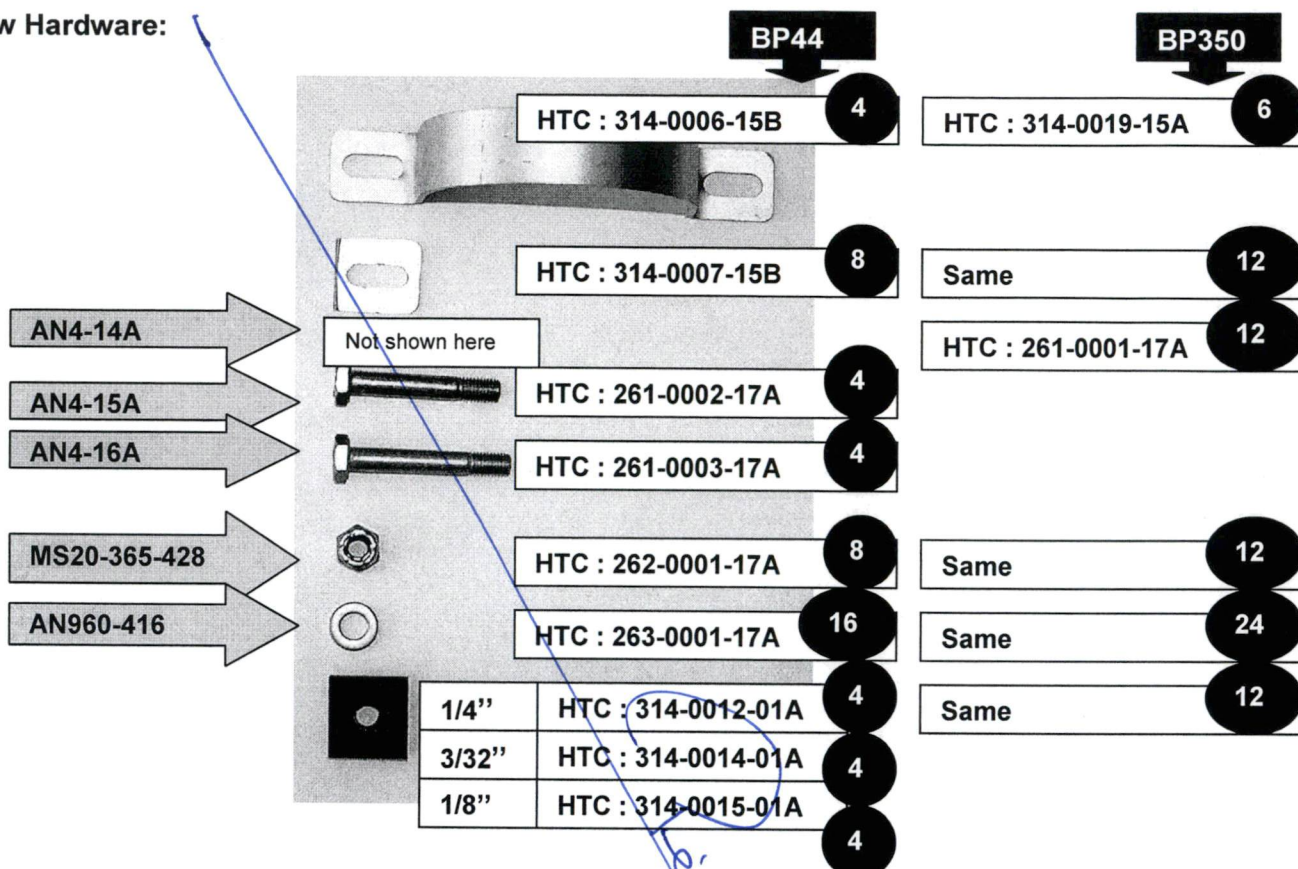
BearPaw Hardware:



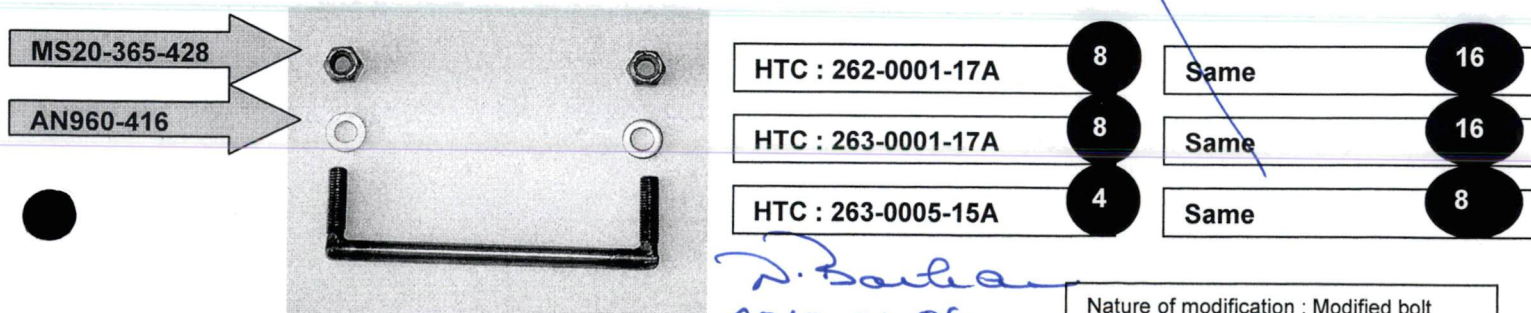
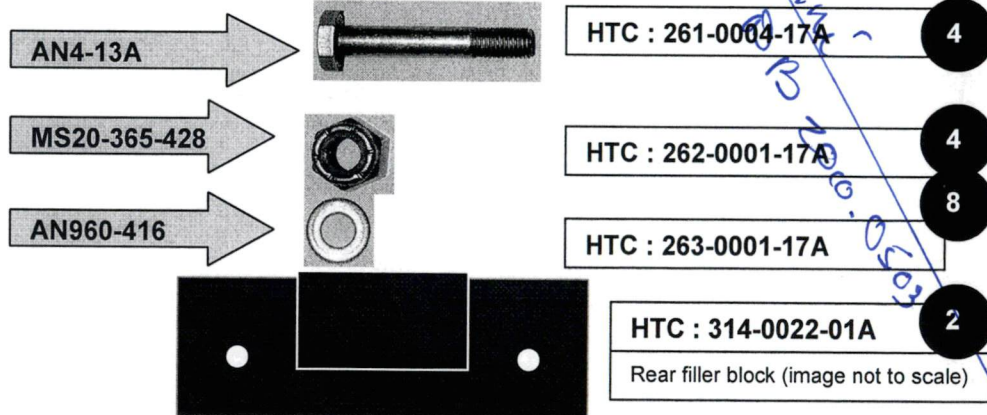
Rear Filler block & IceBlade Hardware:



BearPaw Hardware:



Rear Filler block & IceBlade Hardware:



BearPaw Hardware:

BP44

HTC : 314-0006-15B

4

HTC : 314-0007-15B

8

Not shown here

HTC : 261-0002-17A

4

HTC : 261-0003-17A

4

HTC : 262-0001-17A

8

HTC : 263-0001-17A

16

1/4"

HTC : 314-0012-01A

4

3/32"

HTC : 314-0014-01A

4

1/8"

HTC : 314-0015-01A

4

BP350

HTC : 314-0019-15A

6

Same

12

HTC : 261-0001-17A

12

Same

12

Same

24

Same

12

AN4-14A

AN4-15A

AN4-16A

MS20-365-428

AN960-416

Rear Filler block & IceBlade Hardware:

AN4-13A

MS20-365-428

AN960-416

HTC : 261-0004-17A

4

HTC : 262-0001-17A

4

HTC : 263-0001-17A

8

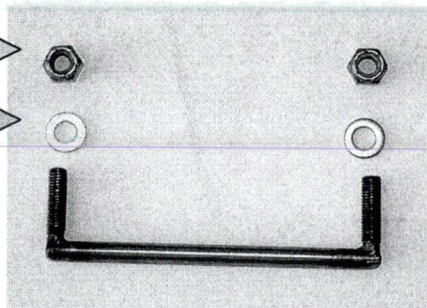
HTC : 314-0022-01A

2

Rear filler block (image not to scale)

MS20-365-428

AN960-416



HTC : 262-0001-17A	8	Same	16
HTC : 263-0001-17A	8	Same	16
HTC : 263-0005-15A	4	Same	8

*DNR BP350
Access to 16-24
2010.04.24*

*D. Barthe
2010.10.06*

Nature of modification : Modified bolt type to AN4-13A for filler block

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Annex A (BearPaw Assembly Drawing)
Annex B (BearPaw Pad Allowable Damage Drawing)

Handwritten signature and initials:
Victorin
BP

INTRODUCTION

Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw for your Robinson R44.

General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance to your Robinson helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

Table 1 – Helitowcart Customer Support

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-2291 info@helitowcart.com

Helicopter Effectivity

This installation instruction applies to the following ROBINSON Helicopters:

Table 2 – Robinson Helicopter Effectivity

A/C Model	Serial no.	Type Certificate Data Sheet
R44	0271 thru 9999	H11NM
R44 II	1140, 10001 and subsequent	H11NM

Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

INSTALLATION

BearPaw Installation

Reference Documentation:

- [1] Robinson R44 - Maintenance Manual & Instruction for Continued Airworthiness. RTR460.
- [2] Annex A – BearPaw Assembly Drawings (112-0001-00-C & 112-0001-00-E)

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 1/2" (38mm);
- Remove aft skid wearshoe & re-install the attaching screws.

Step 2: BearPaw Preparation

- With IceBlade Option: Install ice blades (Qty:2) under BearPaw pad as per drawing (112-0001-00) Ref [2];
- With IceBlade Option: Insert washer (Washer P/N 263-0001-17) through threaded part of the ice blade and secure with nut (P/N 262-0001-17);
- Position the BearPaw under skid at the aft intersection with the cross tube as per figure 1 with narrow edge pointing forward.

Step 3: BearPaw Set Up

- Insert washers (P/N 263-0001-17) through all four front bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert bolts(P/N261-0002-17) & (261-0003-17) and washer (P/N 263-0001-17) through BearPaw pad as per drawing (112-0001-00) Ref [2]
- Insert small filler blocks (P/N314-0012-01) & (P/N314-0014-01) at front of BearPaw& Insert filler blocks (P/N314-0015-01) at center of BearPaw as per drawing (112-0001-00) Ref [2];
- The use of filler blocks mentioned above may be replaced or complemented by the use of washers (P/N 263-0001-17). Bolts (P/N261-0002-17) & (261-0003-17) may be replaced by longer or shorter AN4 bolts as required. *increased, decreased*
- Insert both U-shaped clips (P/N 314-0006-15) through bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert slotted clip supports (P/N 314-0007-15) through all four bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb.

Step 3.1: With the Streamline Version of the Bearpaw (P/N 112-0001-00-E)

- Insert washers (P/N 263-0001-17) through bolts (P/N261-0002-17)
- Insert bolts (P/N261-0002-17) and washer (P/N 263-0001-17) through the rear BearPaw pad as per drawing (112-0001-00-E) Ref [2]
- Insert rear filler block (P/N 314-0022-01) at the rear of BearPaw as per drawing (112-0001-00-E) Ref [2];
- Insert two washers (P/N 263-0001-17) per bolts (P/N261-0002-17) (four washers total)
- Insert Low U-shaped clip (P/N 314-0023-15) through bolts: (P/N261-0002-17) as per drawing (112-0001-00-E) Ref [2];
- Insert slotted clip supports (P/N 314-0007-15) through bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Bolts (P/N261-0002-17) may be replaced by longer or shorter AN4 bolts as required. Max. torque on nuts 60 in.-lb.

Page 3 of 14

Step 4: Final Step

- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

Figure 1 - Installed BearPaw Model BP44 (112-0001-00-C)

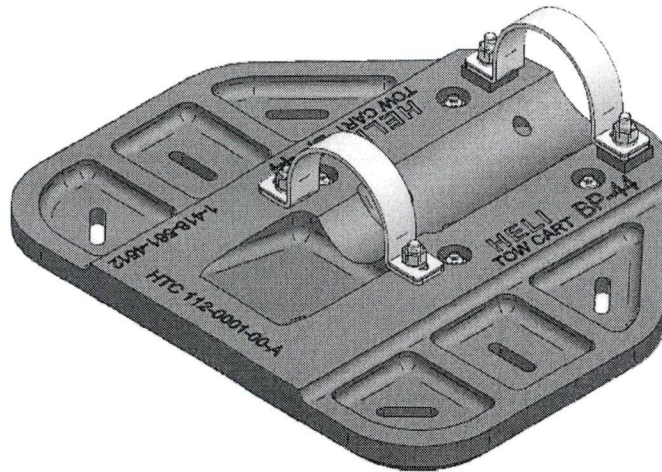
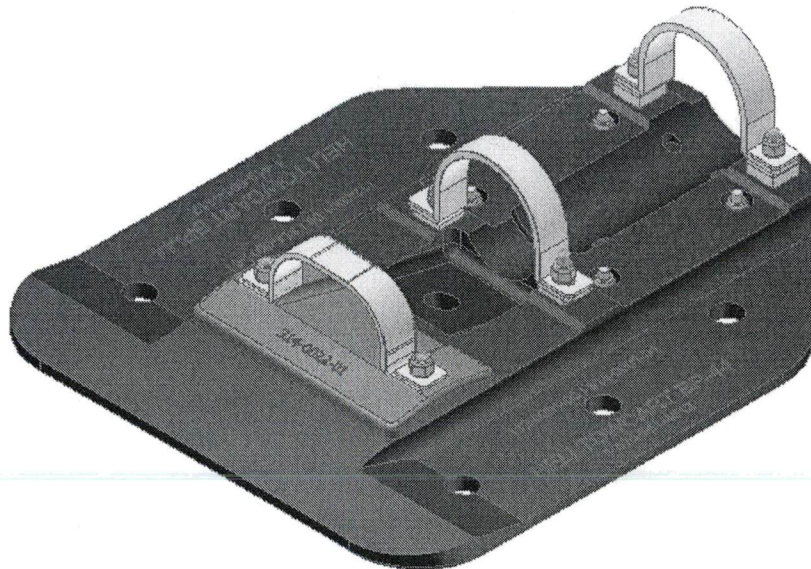


Figure 2 - BearPaw Model BP44 Streamline (112-0001-00-E)



BearPaw Removal

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15) and U-shaped clips (P/N 314-0006-15);
- With the Streamline Version of the Bearpaw (P/N 112-0001-00-E) remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15) and rear U-shaped clips (P/N 314-0023-15);
- Remove BearPaw pad (P/N 314-0001-01);
- Inspect skid tubes to confirm serviceability;
- Re-install aft wearshoe with screws as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required.

Weight & Balance

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

Table 3 – Weight & Balance Data

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP44	5.9 Lb 2.7 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	758.1 in-lb 8.8 m-kg
Helitowcart BearPaw Model BP44 - Streamline	7.0 Lb 3.2 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	889.5 in-lb 10.4 m-kg

Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

Table 4 – Parts List

Description	Qty	Part No.	Name (Drawing no.)
BearPaw Model BP44	1	112-0001-00	112-0001-00-C / BearPaw Assembly 112-0001-00-E / BearPaw Streamline Assembly
BearPaw pad	1	314-0001-01	314-0001-01-A / BearPaw – Pad (VNR088) 314-0001-01-B / BearPaw – Pad Streamline
Low U Shaped Clips	1	314-0023-15	BearPaw - Low U Shaped Clips
U Shaped Clips	2	314-0006-15	BearPaw - U Shaped Clips (VNR087)
Slotted Clip Support	6	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks REAR	1	314-0022-01	BearPaw – Filler block Rear
Filler blocks 1/4"	2	314-0012-01	BearPaw – Filler block 1/4" (VNR099)
Filler blocks 3/32"	2	314-0014-01	BearPaw – Filler block 3/32" (VNR103)
Filler blocks 1/8"	2	314-0015-01	BearPaw – Filler block 1/8" (VNR104)
Bolts	2 *(+2)	261-0002-17	Bolt- AN4-15 *Note: for Streamline Assembly
Bolts	2	261-0003-17	Bolt- AN4-16
Nuts	4 *(+2)	262-0001-17	Nut- MS20-365-428 *Note: +2 for Streamline Assembly
Washers	8 *(+8)	263-0001-17	Washer – AN960-416 *Note: +8 for Streamline Assembly
Shrink	3X	314-0016-00	BearPaw – Shrink Specifications & Installation
IceBlade Option Model OIB	2	314-0005-15	VNR086 / IceBlade Assembly
Nuts	4	262-0001-17	Nut- MS20-365-428
Washers	4	263-0001-17	Washer – AN960-416

INSPECTION

Life Limited Items

There are no life limited items for the Helitowcart BearPaw.

Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:
Table 5 – Tolerances for cracks & wear;
Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2) or
Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 300 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the R44 landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 300 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

300 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:
Table 5 – Tolerances for cracks & wear;
Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2); or
Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

Table 5 – Tolerances for Cracks & Wear

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,350	0,050	
B	1,000	0,250	
C	0,375	0,075	<p><u>Stiffeners</u>: NO cracks in stiffeners.</p> <p><u>Pockets</u>: Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.</p>
D	0,350	0,050	

? Rear filler block?
Ne démonte pas s'il y a
dans cette boîte?



314-0011-00 Rev D
BearPaw Model BP44
Installation Instructions - R44

E	N/A	N/A	No cracks allowed in zone E
F	0,350	0,050	For P/N 314-0001-01-B Only
G	0,75	0,050	For P/N 314-0001-01-B Only

Overhaul Requirements


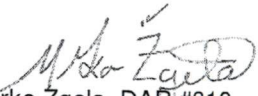
- Not applicable for the designated application of this device.

REVISIONS & APPROVAL

Revisions

Date	Rev	Nature of Revisions
April 15, 2010	D	Addition of a rear U shaped clip in the Streamline BearPaw Pad configuration.
October 22, 2009	C	Introduction of new streamline BearPaw Pad configuration as alternate.
September 7, 2006	B	- Added filler blocks and heat shrink to product list. - Modified recommended bolt models (lengthened) - Revised inspection requirements from 100 hour to 300 hour intervals. - Identification of the IceBlade assembly as an optional feature.
June 12, 2006	A	Initial issue

Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	April 15, 2010
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	April 15, 2010

Annex A

See: BearPaw Assembly, drawing no. 112-0001-00-C
BearPaw Streamline Assembly, drawing no. 112-0001-00-E

Annex B

See: BearPaw Pad Allowable Damage Drawing, drawing no. 314-0001-01-A (VNR088) page 2 of 2.
BearPaw Streamline Allowable Damage Drawing, drawing no. 314-0001-01-B page 3 of 3)

0? filler block Rear?

Page 8 of 14

Annex A

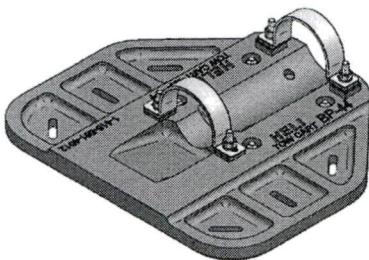
BearPaw Assembly, Drawing no. 112-0001-00-C
BearPaw Streamline Assembly, Drawing no. 112-0001-00-E




BY VANAIR

314-0011-00 Rev D BearPaw Model BP44 Installation Instructions - R44

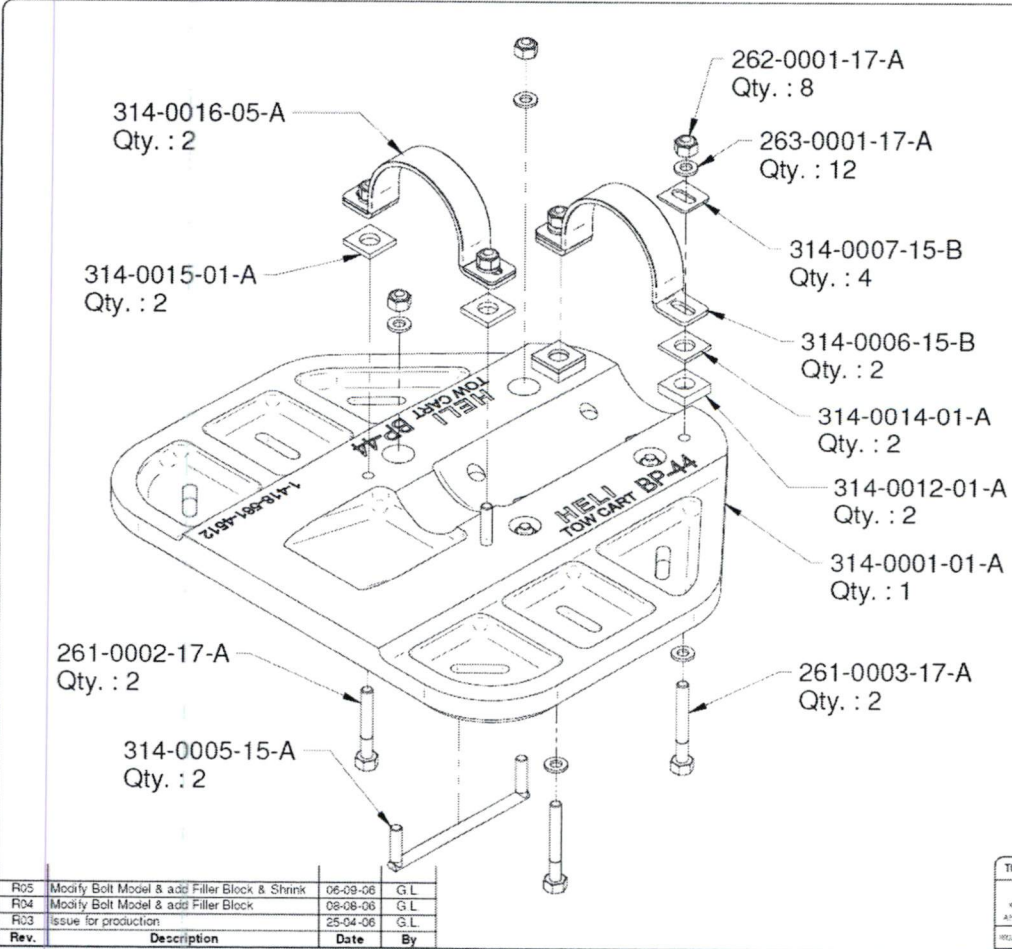
N°	Qty	Description	Part #
1'	1	Bearpaw - Pad	314-0001-01-A
2'	2	Bearpaw - Iceblade assembly	314-0005-15-A
3'	2	Bearpaw - U Shaped clip	314-0006-15-B
4'	4	Bearpaw - Slotted clip support	314-0007-15-B
5'	8	Nut M520-365-428	262-0001-17-A
6'	12	Washer AN960-416	263-0001-17-A
7'	2	Bolt AN4-15A	261-0002-17-A
8'	2	Bearpaw - Filler Block 1/4"	314-0012-01-A
9'	2	Bolt AN4-16A	261-0003-17-A
10'	2	Bearpaw - Shrink 1"x5"	314-0016-05-A
11'	2	Bearpaw - Filler Block 1/8"	314-0015-01-A
12'	2	Bearpaw - Filler Block 3/32"	314-0014-01-A



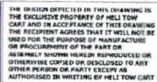
NOTE : Iceblade assembly can be omitted from installation (Optional)

		Vanair inc. 2610 Vanair Court Saint-Jovite, Quebec Canada G7A 3S9 Tel : (418) 836-2291 Fax : (418) 836-2291 www.vanair.com		THIS DOCUMENT IS PROPERTY OF VANAIR INC. WRITTEN REVISION FROM VANAIR INC. SHALL BE OBTAINED PRIOR TO COPYING, USING OR MODIFYING	
Title: Bearpaw Assembly					
Date: 2008-04-25 By: G. Lapointe	Rev: 1 NA	1 de 1			
Approved: [Signature] Date: 2008-04-25	Revision: [Signature] VNR083	R05			
112-0001-00-C					

TOLERANCES
UNLESS OTHERWISE SPECIFIED
ALL DIMENSIONS ARE IN MILLIMETERS
ANGLES ± 1°

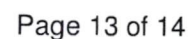


Rev.	Description	Date	By
R05	Modify Bolt Model & add Filler Block & Shrink	06-09-06	G.L.
R04	Modify Bolt Model & add Filler Block	08-08-06	G.L.
R03	Issue for production	25-04-06	G.L.



Annex B

BearPaw Pad Allowable Damage Drawing, Drawing no. 314-0001-01-A (VNR088), Page 2 of 2
BearPaw Streamline Allowable Damage Drawing, Drawing no. 314-0001-01-B, Page 3 of 3





Ecart entre dessin de Côté inox et STS-STC
est de moins de 1mm donc laisser tel quel.

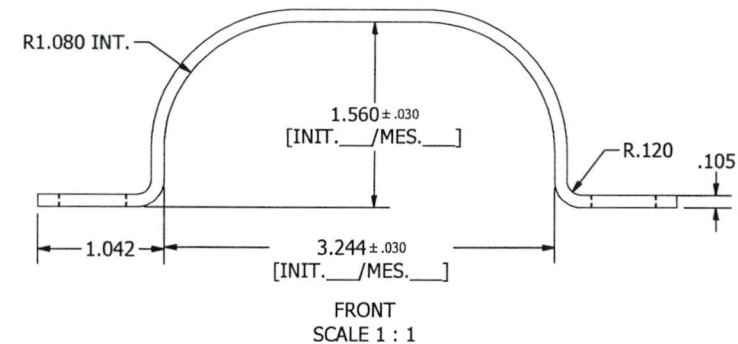
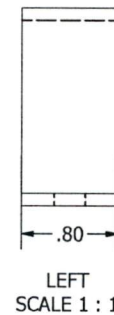
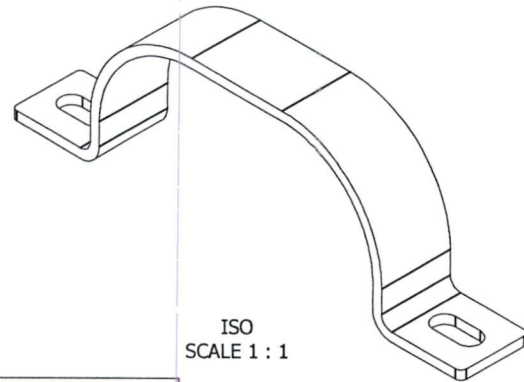
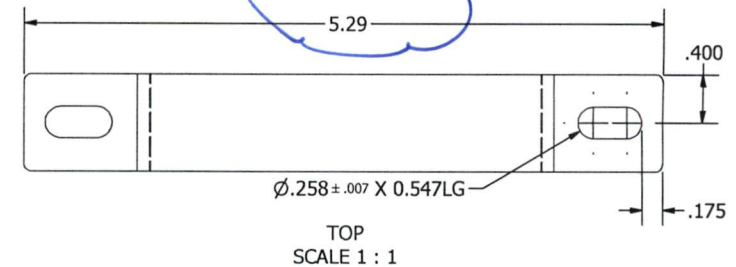
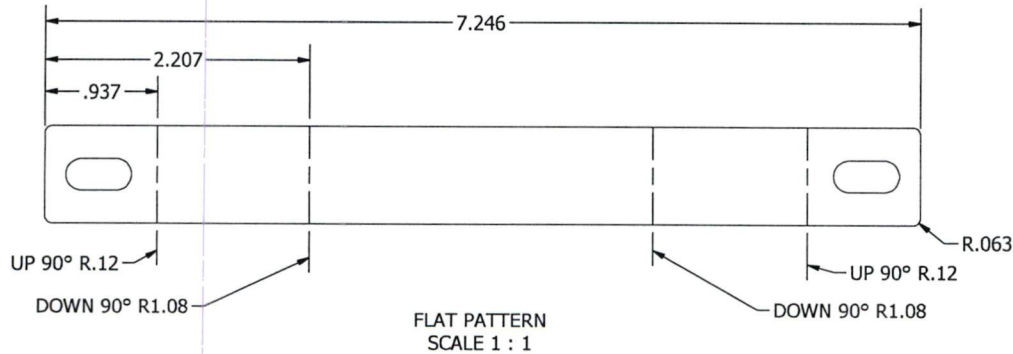
NB
200.04.24

- NOTES:
1. INTERPRET DRAWING IN ACCORDANCE WITH ANSI Y14.5M 1994. DIMENSIONS AND TOLERANCING
 2. REMOVE ALL BURRS AND SHARP EDGES 1/64" MAX
 3. FILL CLIENT INSPECTION FORM

REVISIONS					DR. & DATE	STATUS
<input type="checkbox"/> Reworkable	<input checked="" type="checkbox"/> Nonreworkable	<input checked="" type="checkbox"/> Noted	<input checked="" type="checkbox"/> NA			
Zone	Rev	Description				
	A	Issue for Production				

1mm \approx 0.965mm = $\Delta 0.038"$

5.328 ?



THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SIZE
1		314-0023-15-A	BEARPAW U SHAPED CLIP REAR	STEEL	0.105

1	ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SIZE
1			314-0023-15-A	BEARPAW U SHAPED CLIP REAR	STEEL	0.105
1			314-0023-15-A	BEARPAW U SHAPED CLIP REAR	STEEL	0.105
1			314-0023-15-A	BEARPAW U SHAPED CLIP REAR	STEEL	0.105
1			314-0023-15-A	BEARPAW U SHAPED CLIP REAR	STEEL	0.105
1			314-0023-15-A	BEARPAW U SHAPED CLIP REAR	STEEL	0.105
1			314-0023-15-A	BEARPAW U SHAPED CLIP REAR	STEEL	0.105
1			314-0023-15-A	BEARPAW U SHAPED CLIP REAR	STEEL	0.105
1			314-0023-15-A	BEARPAW U SHAPED CLIP REAR	STEEL	0.105
1			314-0023-15-A	BEARPAW U SHAPED CLIP REAR	STEEL	0.105

HELI TOW CART

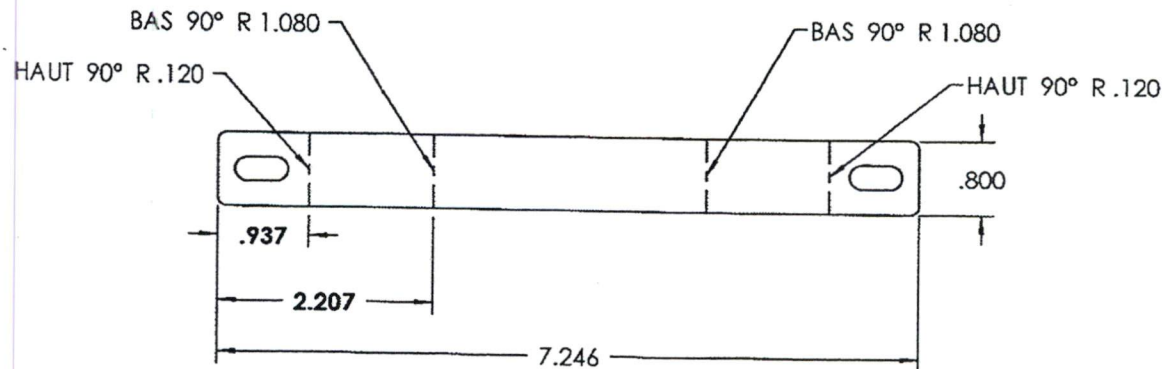
REARPAW LOW U SHAPED CLIP

DRAWING NO. B 314-0023-15-A

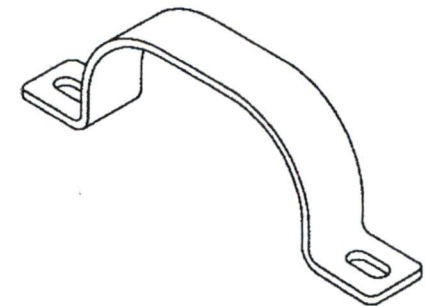
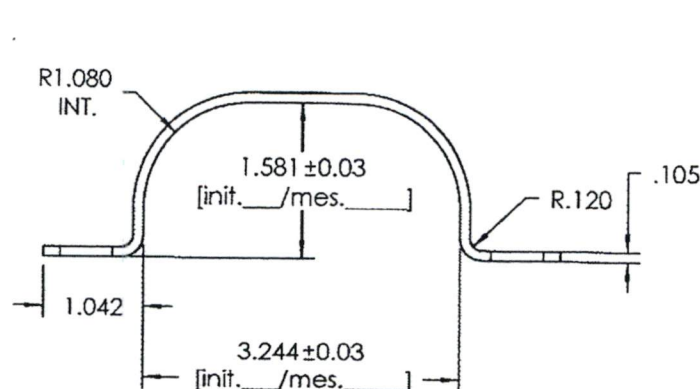
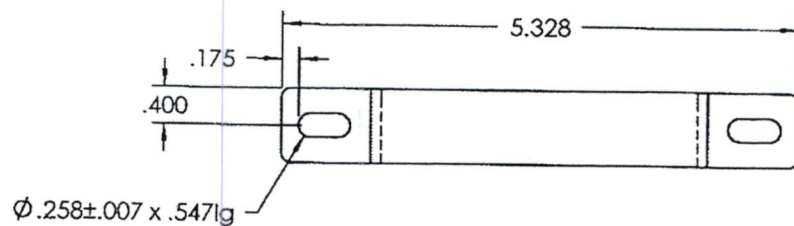
DATE: 05/04/2010

SCALE: 1:1

NO.	MATÉRIEL	ÉP. SEUR	QTE / TOT.
1	SS 304 2B	0.105	10



****Arrondir toute les arretes au rayon 1/64" tout le tour et remplir la feuille d'inspection du client****



TOLÉRANCE
(SI NON SPÉCIFIÉES)

X.X = ±0.100"
X.XX = ±0.010"
X.XXX = ±0.005"
FRACTION = ±1/32"
ANGLE = ±1°

CE Dessin est la
propriété de CÔTÉ INOX
Tous droits réservés

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ALL RIGHTS RESERVED

RESPONSABLE:

S.C.

DESSINÉ PAR:

S.P.

VÉRIFIÉ PAR:

CLIENT:

HELI TOW CART

PROJET:

10-0552-01

NOM PIÈCE / ASSEMBLAGE:

LOW U SHAPED CLIP

TYPE DE DÉCOUPE:

LASER

DESSIN NO:

314-0023-15A

ECHELLE:

1:2

DATE:

2010-02-23

REV:

1

Page 1 de 2

FAX TRANSMISSION

Date: 2010.03.30

Pages: 19

To: MIRKO IGELA

Fax: 819.377.7928

From: NATHALIE BARBEAU

Object: ECO # 6 ADD 3RD U-CLIP TO BP44 REAR

MIRKO,
VOICI LES CHANGEMENTS IDENTIFIÉS POUR
L'AJOUT DE CET ITEM.

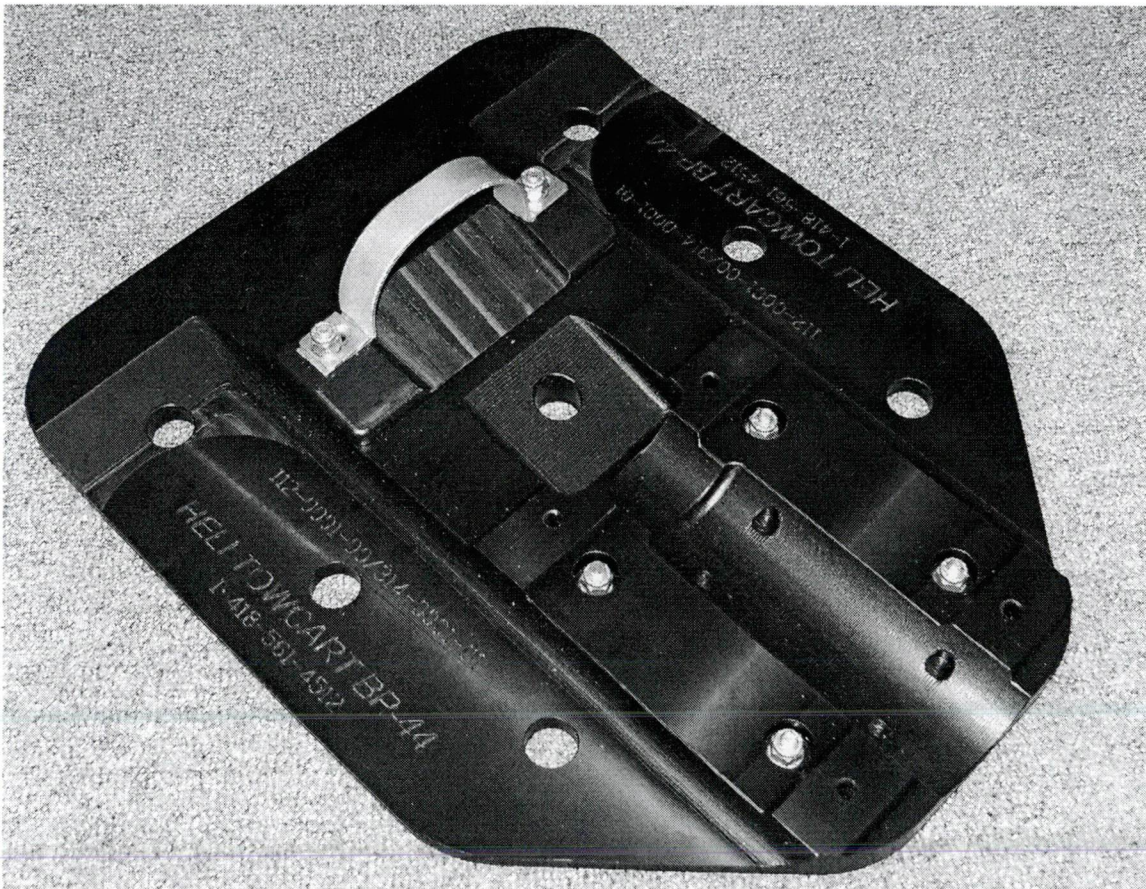
ON VEUT LE FAIRE DÈS QUE POSSIBLE:
ON A 2 CLIENTS DIFFÉRENTS QUI
L'ONT DEMANDÉ.... DONC ON PROCÈDE.

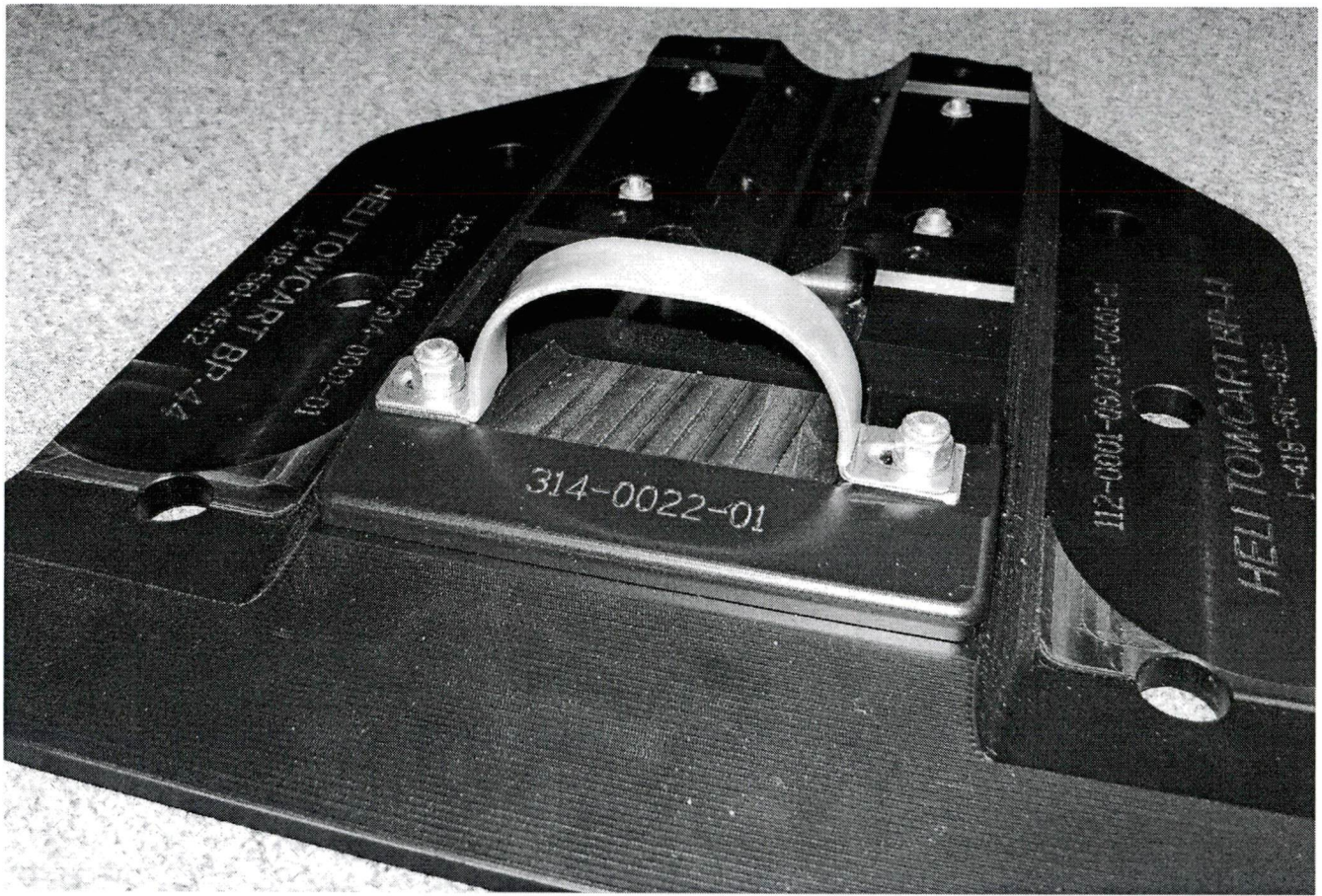
J'AI DÉJÀ IDENTIFIÉ TOUS LES DÉTAILS À
METTRE À JOUR POUR FACILITER LE TRAVAIL
DE SIMON.

LUCIEN A ESSAYÉ AVEC CHRIS ET CELA
FIT BIEN.

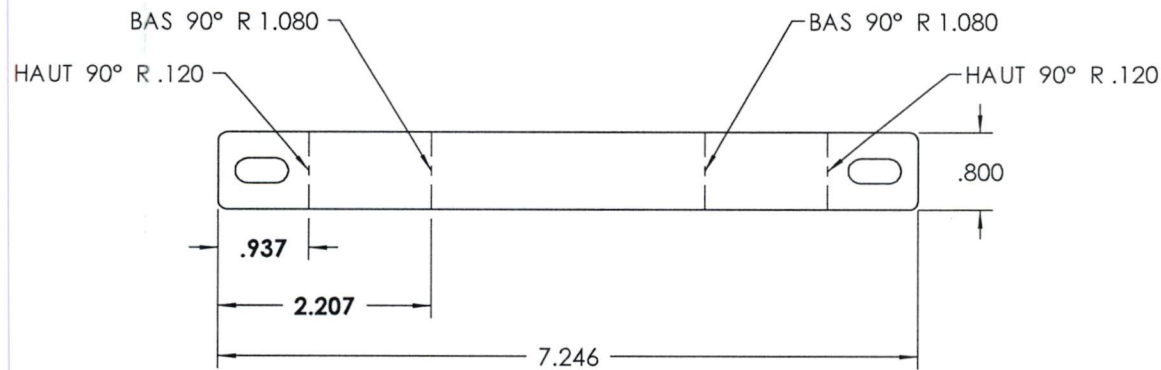
Merci!

Nathalie

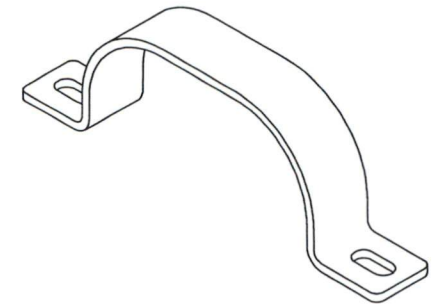
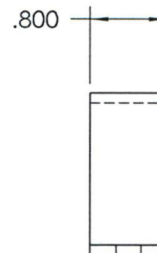
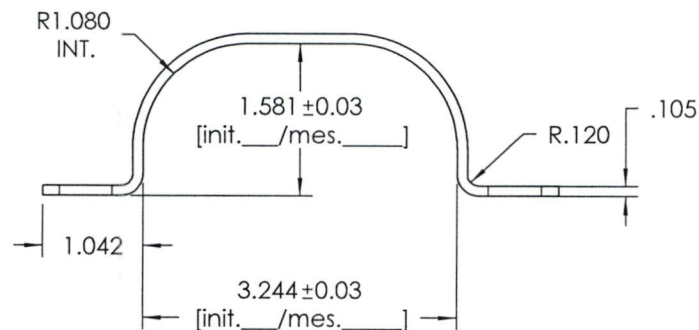
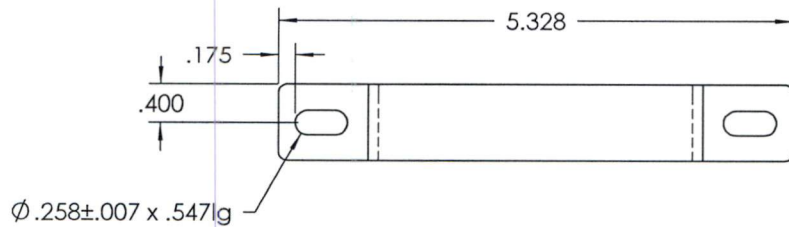




NO.	MATÉRIEL	ÉPAISSEUR	QTE / TOT.
1	SS 304 2B	0.105	36



****Arrondir toute les arretes
au rayon 1/64" tout le tour et
remplir la feuille d'inspection
du client****



 CÔTÉ I N O X	TOLÉRANCE (SI NON SPÉCIFIÉES) X.X = ±0.100" X.XX = ±0.010" X.XXX = ±0.005" FRACTION = ±1/32" ANGLE = ±1°	CE DESSIN EST LA PROPRIÉTÉ DE CÔTÉ INOX TOUS DROITS RÉSERVÉS	RESPONSABLE: S.C.	CLIENT: HELI TOW CART	TYPE DE DÉCOUPE: LASER		
		THIS DRAWING IS THE PROPERTY OF CÔTÉ INOX ALL RIGHTS RESERVED	DESSINÉ PAR: S.P.	PROJET: 10-0552-01	DESSIN NO: 314-0023-15A rev2		REV: 2
			VÉRIFIÉ PAR:	NOM PIÈCE / ASSEMBLAGE: LOW U SHAPED	ECHELLE: 1:2	DATE: 2010-02-23	Page 1 de 2

4.

3

2

1

112-0001-00-D

1 OF 1

REVISIONS

REV	DESCRIPTION	DATE	BY
A	ISSUE FOR PRODUCTION		
B	MODIFY BOLT MODEL AND ADD FILER BLOCK		
C	MODIFY BOLT MODEL AND ADD FILER BLOCK AND SHRINK		
D	ADDITION OF STREAMLINE PAD CONFIGURATION		

NOTE:

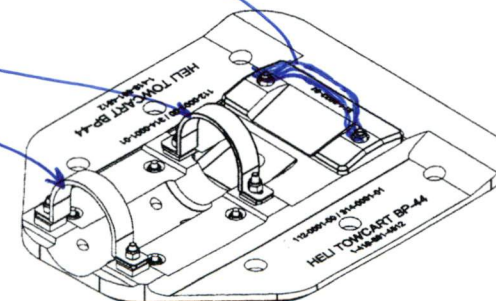
1. ICEBLADE ASSEMBLY CAN BE OMITTED FROM INSTALLATION (OPTIONAL)

2. FASTENERS LENGTH TO BE DETERMINED AT THE INSTALLATION

TYP ALL

U clip BB44
P/N 314-0006-15

New: Low Uclip P/N 314-0023-15



ISO
SCALE 1/4

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SIZE
14	2	261 0004 17 A	BOLT AN4 15A	STEEL	1/4
13	2	314 0016 05 A	BEARPAW SHRINK 1X5	RUBBER	
12	2	314 0015 01 A	BEARPAW FILER BLOCK 1/8	UHMW	1/8
11	2	314 0014 01 A	BEARPAW FILER BLOCK 3/32	UHMW	3/32
10	2	261 0007 17 A	BOLT AN4 15A	STEEL	1/4
9	10	262 0001 17 A	NUT MS20 365 4R	STEEL	1/4
8	2	261 0005 17 A	BOLT AN4 16A	STEEL	1/4
7	4	314 0007 15 A	BEARPAW SLOTTED CLIP SUPPORT	STEEL	
6	2	314 0006 15 A	BEARPAW U SHAPED CLIP	STEEL	
5	2	314 0012 01 A	BEARPAW FILER BLOCK 1/4	UHMW	1/4
4	2	314 0005 15 A	BEARPAW ICE BLADE ASSEMBLY	STEEL	
3	15	263 0001 17 A	WASHER AN6R 4R	STEEL	1/4
2	1	314 0022 01 A	BEARPAW FILER BLOCK REAR	UHMW	1/2
1	1	314 0001 01 A	BEARPAW PAD	UHMW	

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DATE	APPROVED	DATE	APPROVED

DESIGNED BY	JOHN A. BERNER	DATE	2010-10-22
DESIGNED BY	JOHN A. BERNER	DATE	2010-10-22
CHECKED BY			
APPROVED BY			
APPROVED BY			
APPROVED BY			
APPROVED BY			
APPROVED BY			
APPROVED BY			
APPROVED BY			
APPROVED BY			

HELI TOW CART	
BEARPAW STREAMLINE ASSEMBLY	
REV	DESCRIPTION
B	112-0001-00-D
D	

P. Baile
2010-01-06

112-0001-00-D

TABLE OF CONTENTS:

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General	p.2
Helicopter Effectivity	p.2
Installer Responsibilities	p.2

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BearPaw Removal	p.5
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Pre-Flight	p.7
Periodic Inspection Schedule	p.7
300 Hour or Yearly Inspection Details	p.7
Overhaul Requirements	p.8

REVISIONS & APPROVAL	p.8
---------------------------------	------------

Annex A (BearPaw Assembly Drawing)
Annex B (BearPaw Pad Allowable Damage Drawing)

*Tises à Jour SUGGÉRÉES
VS AJOUT 3^e U-CLIP @ BP44

NR
2010 03 30

INTRODUCTION

Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw for your Robinson R44.

General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance to your Robinson helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

Table 1 – Helitowcart Customer Support

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-2291 info@helitowcart.com

Helicopter Effectivity

This installation instruction applies to the following ROBINSON Helicopters:

Table 2 – Robinson Helicopter Effectivity

A/C Model	Serial no.	Type Certificate Data Sheet
R44	0271 thru 9999	H11NM
R44 II	1140, 10001 and subsequent	H11NM

Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

INSTALLATION

BearPaw Installation

Reference Documentation:

- [1] Robinson R44 - Maintenance Manual & Instruction for Continued Airworthiness. RTR460.
- [2] Annex A – BearPaw Assembly Drawing (112-0001-00)

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 1/2" (38mm);
- Remove aft skid wearshoe & re-install the attaching screws.

Step 2: BearPaw Preparation

- With IceBlade Option: Install ice blades (Qty:2) under BearPaw pad as per drawing (112-0001-00) Ref [2];
- With IceBlade Option: Insert washer (Washer P/N 263-0001-17) through threaded part of the ice blade and secure with nut (P/N 262-0001-17);
- With the Streamline version of the Bearpaw (P/N 112-0001-00-D), install filler block (P/N 314-0022-01) with two bolts (P/N 261-0003-17), four washers (P/N 263-0001-17) and two nuts (P/N 262-0001-17) as per drawing (112-0001-00-D) Ref [2];
- Position the BearPaw under skid at the aft intersection with the cross tube as per figure 1 with narrow edge pointing forward.

Step 3: BearPaw Set Up

- Insert washers (P/N 263-0001-17) through all four bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert bolts(P/N261-0002-17) & (261-0003-17) and washer (P/N 263-0001-17) through BearPaw pad as per drawing (112-0001-00) Ref [2]
- Insert SMALL filler blocks (P/N314-0012-01) & (P/N314-0014-01) at front of BearPaw & Insert filler blocks (P/N314-0015-01) at CENTER rear of BearPaw as per drawing (112-0001-00) Ref [2];
- The use of filler blocks mentioned above may be replaced or complemented by the use of washers (P/N 263-0001-17). Bolts (P/N261-0002-17) & (261-0003-17) may be replaced by longer or shorter AN4 bolts as required.
- Insert both FRONT U-shaped clips (P/N 314-0006-15) through bolts: 2x(P/N261-0002-17) & 2x(261-0003-17);
- Insert FRONT slotted clip supports (P/N 314-0007-15) through all FRONT four bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb;
- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

ADD

NOTE: CROQUIS FAIT POUR FACILITER LA REVUE DE L'INSTRUCTION. SEULEMENT 2x

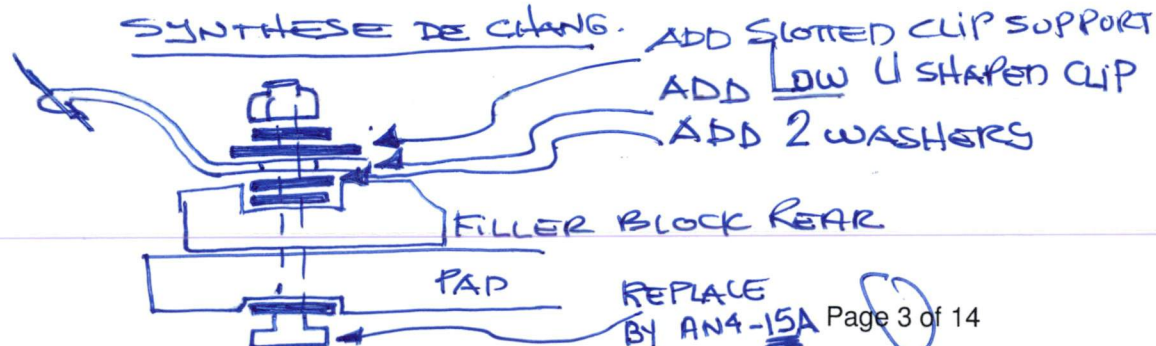


Figure 1 - Installed BearPaw Model BP44

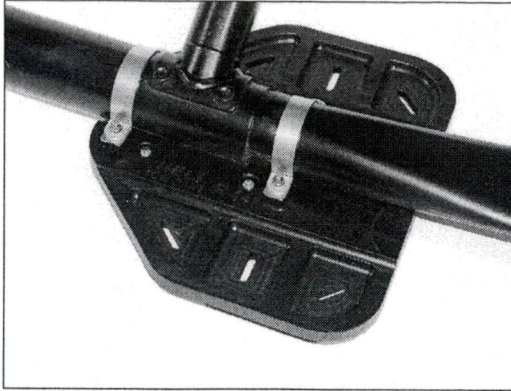
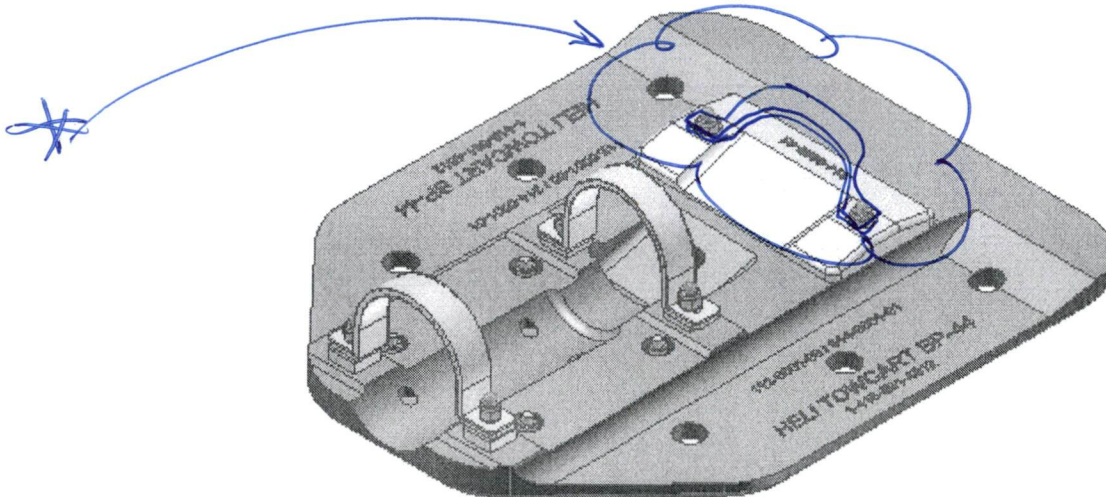


Figure 2 - BearPaw Model BP44 Streamline



BearPaw Removal

Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), washers (P/N 263-0001-17), slotted clip support (P/N 314-0007-15), U-shaped clips (P/N 314-0006-15) and remove BearPaw pad (P/N 314-0001-01);
- Inspect skid tubes to confirm serviceability;
- Re-install aft wearshoe with screws as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required.

Weight & Balance

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

Table 3 – Weight & Balance Data

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP44	5.9 Lb 2.7 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	758.1 in-lb 8.8 m-kg
Helitowcart BearPaw Model BP44 - Streamline	? 6.9 Lb 3.1 Kg	0.0in. (0.0mm)	0.0lb-kg (0.0mm-kg)	128.5 in 3.26 m	? 886.6 in-lb 10.1 m-kg

Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

Table 4 – Parts List

Description	Qty	Part No.	Name (Drawing no.)
BearPaw Model BP44	1	112-0001-00	112-0001-00-C / BearPaw Assembly 112-0001-00-D / BearPaw Streamline Assembly
BearPaw pad	1	314-0001-01	314-0001-01-A / BearPaw – Pad (VNR088) 314-0001-01-B / BearPaw – Pad Streamline
U Shaped Clips	2	314-0006-15	BearPaw - U Shaped Clips (VNR087)
Slotted Clip Support	6	314-0007-15	BearPaw - Slotted Clip Support (VNR089)
Filler blocks	1	314-0022-01	BearPaw – Filler block Rear
Filler blocks 1/4"	2	314-0012-01	BearPaw – Filler block 1/4" (VNR099)
Filler blocks 3/32"	2	314-0014-01	BearPaw – Filler block 3/32" (VNR103)
Filler blocks 1/8"	2	314-0015-01	BearPaw – Filler block 1/8" (VNR104)
Bolts	4	261-0002-17	Bolt- AN4-15
Bolts	2	261-0003-17	Bolt- AN4-16
Bolts	X	261-0004-17	Bolt AN4-13 *Note: for Streamline Assembly
Nuts	4 *(+2)	262-0001-17	Nut- MS20-365-428 *Note: +2 for Streamline Assembly
Washers	8 *(+8)	263-0001-17	Washer – AN960-416 *Note: +8 for Streamline Assembly
Shrink	2	314-0016-00	BearPaw – Shrink Specifications & Installation
IceBlade Option Model OIB	2	314-0005-15	VNR086 / IceBlade Assembly
Nuts	4	262-0001-17	Nut- MS20-365-428
Washers	4	263-0001-17	Washer – AN960-416

ADD →

Low U shaped clip 1 314-0023-15 Bearpaw- LOW U shaped Clip.

INSPECTION

Life Limited Items

There are no life limited items for the Helitowcart BearPaw.

Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:
 Table 5 – Tolerances for cracks & wear;
 Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2) or
 Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 300 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the R44 landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 300 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

300 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:
 Table 5 – Tolerances for cracks & wear;
 Annex B – BearPaw Allowable Damage Drawing (314-0001-01-A (VNR088) page 2 of 2); or
 Annex B – BearPaw Streamline Allowable Damage Drawing (314-0001-01-B page 3 of 3).

Table 5 – Tolerances for Cracks & Wear

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,350	0,050	
B	1,000	0,250	
C	0,375	0,075	<u>Stiffeners</u> : NO cracks in stiffeners. <u>Pockets</u> : Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,350	0,050	

E	N/A	N/A	No cracks allowed in zone E
F	0,350	0,050	For P/N 314-0001-01-B Only
G	0,75	0,050	For P/N 314-0001-01-B Only

Overhaul Requirements


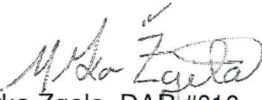
- Not applicable for the designated application of this device.

REVISIONS & APPROVAL

Revisions

Date	Rev	Nature of Revisions
October 22, 2009	C	Introduction of new streamline BearPaw Pad configuration as alternate.
September 7, 2006	B	- Added filler blocks and heat shrink to product list. - Modified recommended bolt models (lengthened) - Revised inspection requirements from 100 hour to 300 hour intervals. - Identification of the IceBlade assembly as an optional feature.
June 12, 2006	A	Initial issue
<i>rc</i>	<i>D</i>	<i>Intro of 3RD U shaped clip</i>

Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	<i>October 22, 2009</i>
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	<i>October 22, 2009</i>

Annex A

See: BearPaw Assembly, drawing no. 112-0001-00-C
 BearPaw Streamline Assembly, drawing no. 112-0001-00-*E*

Annex B

See: BearPaw Pad Allowable Damage Drawing, drawing no. 314-0001-01-A (VNR088) page 2 of 2.
 BearPaw Streamline Allowable Damage Drawing, drawing no. 314-0001-01-*E* page 3 of 3

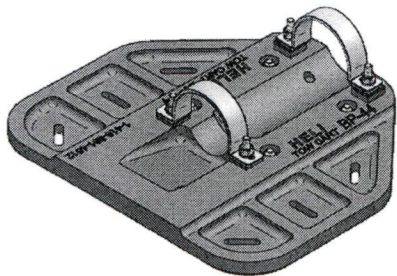
*REAR
FILLER
BLOCK?*

Annex A

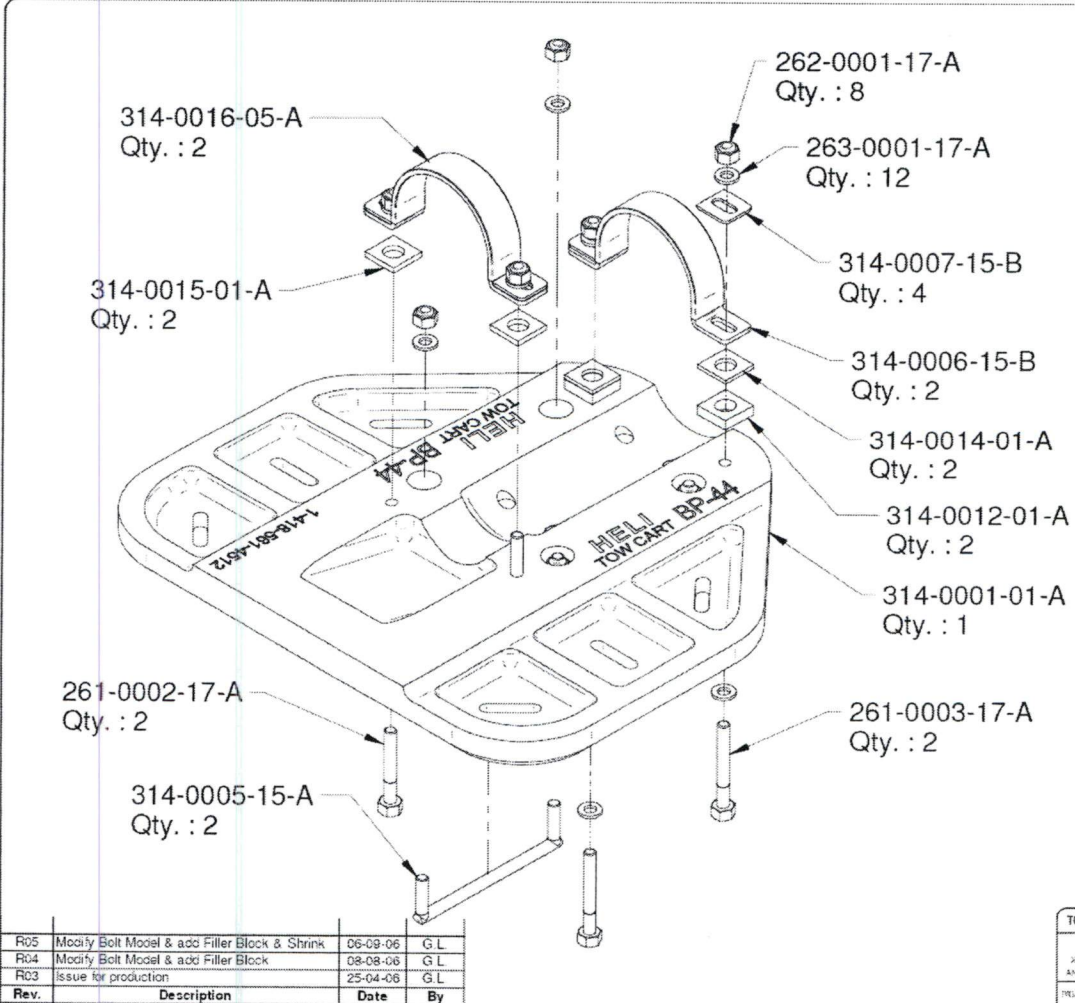
BearPaw Assembly, Drawing no. 112-0001-00-C
BearPaw Streamline Assembly, Drawing no. 112-0001-00-D



N°	Qty	Description	Part #
1°	1	Bearpaw - Pad	314-0001-01-A
2°	2	Bearpaw - Iceblade assembly	314-0005-15-A
3°	2	Bearpaw - U Shaped clip	314-0006-15-B
4°	4	Bearpaw - Slotted clip support	314-0007-15-B
5°	8	Nut MS20-365-428	262-0001-17-A
6°	12	Washer AN960-416	263-0001-17-A
7°	2	Bolt AN4-15A	261-0002-17-A
8°	2	Bearpaw - Filler Block 1/4"	314-0012-01-A
9°	2	Bolt AN4-16A	261-0003-17-A
10°	2	Bearpaw - Shrink 1x5"	314-0016-05-A
11°	2	Bearpaw - Filler Block 1/8"	314-0015-01-A
12°	2	Bearpaw - Filler Block 3/32"	314-0014-01-A



NOTE : Iceblade assembly can be omitted from installation (Optional)



TOLERANCES			
1° ± 0.12°	2° ± 0.010°	3° ± 0.005°	4° ± 0.005°
5° ± 0.005°	6° ± 0.005°	7° ± 0.005°	8° ± 0.005°
9° ± 0.005°	10° ± 0.005°	11° ± 0.005°	12° ± 0.005°
13° ± 0.005°	14° ± 0.005°	15° ± 0.005°	16° ± 0.005°
17° ± 0.005°	18° ± 0.005°	19° ± 0.005°	20° ± 0.005°
21° ± 0.005°	22° ± 0.005°	23° ± 0.005°	24° ± 0.005°
25° ± 0.005°	26° ± 0.005°	27° ± 0.005°	28° ± 0.005°
29° ± 0.005°	30° ± 0.005°	31° ± 0.005°	32° ± 0.005°
33° ± 0.005°	34° ± 0.005°	35° ± 0.005°	36° ± 0.005°
37° ± 0.005°	38° ± 0.005°	39° ± 0.005°	40° ± 0.005°
41° ± 0.005°	42° ± 0.005°	43° ± 0.005°	44° ± 0.005°
45° ± 0.005°	46° ± 0.005°	47° ± 0.005°	48° ± 0.005°
49° ± 0.005°	50° ± 0.005°	51° ± 0.005°	52° ± 0.005°
53° ± 0.005°	54° ± 0.005°	55° ± 0.005°	56° ± 0.005°
57° ± 0.005°	58° ± 0.005°	59° ± 0.005°	60° ± 0.005°
61° ± 0.005°	62° ± 0.005°	63° ± 0.005°	64° ± 0.005°
65° ± 0.005°	66° ± 0.005°	67° ± 0.005°	68° ± 0.005°
69° ± 0.005°	70° ± 0.005°	71° ± 0.005°	72° ± 0.005°
73° ± 0.005°	74° ± 0.005°	75° ± 0.005°	76° ± 0.005°
77° ± 0.005°	78° ± 0.005°	79° ± 0.005°	80° ± 0.005°
81° ± 0.005°	82° ± 0.005°	83° ± 0.005°	84° ± 0.005°
85° ± 0.005°	86° ± 0.005°	87° ± 0.005°	88° ± 0.005°
89° ± 0.005°	90° ± 0.005°	91° ± 0.005°	92° ± 0.005°
93° ± 0.005°	94° ± 0.005°	95° ± 0.005°	96° ± 0.005°
97° ± 0.005°	98° ± 0.005°	99° ± 0.005°	100° ± 0.005°

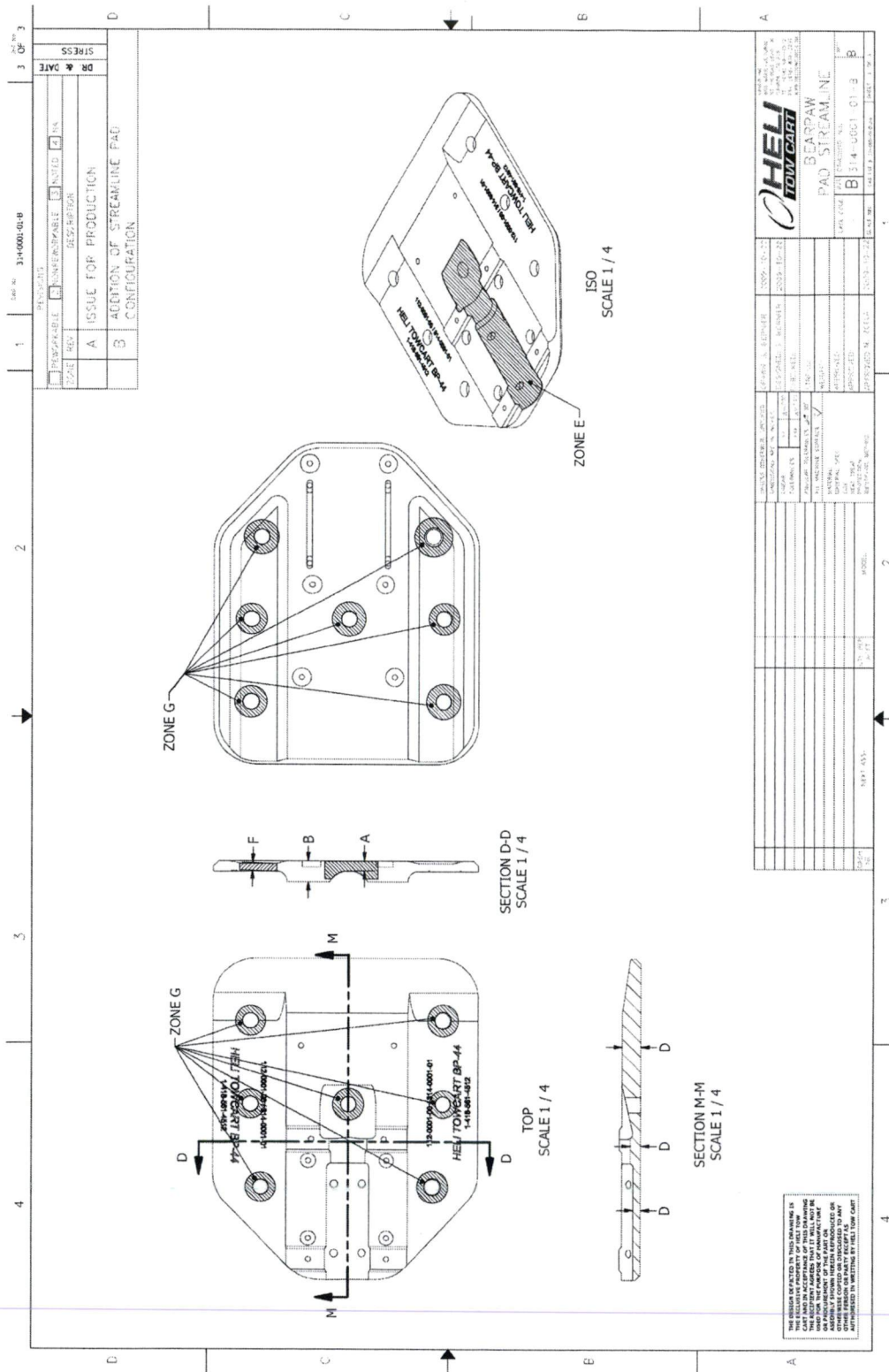


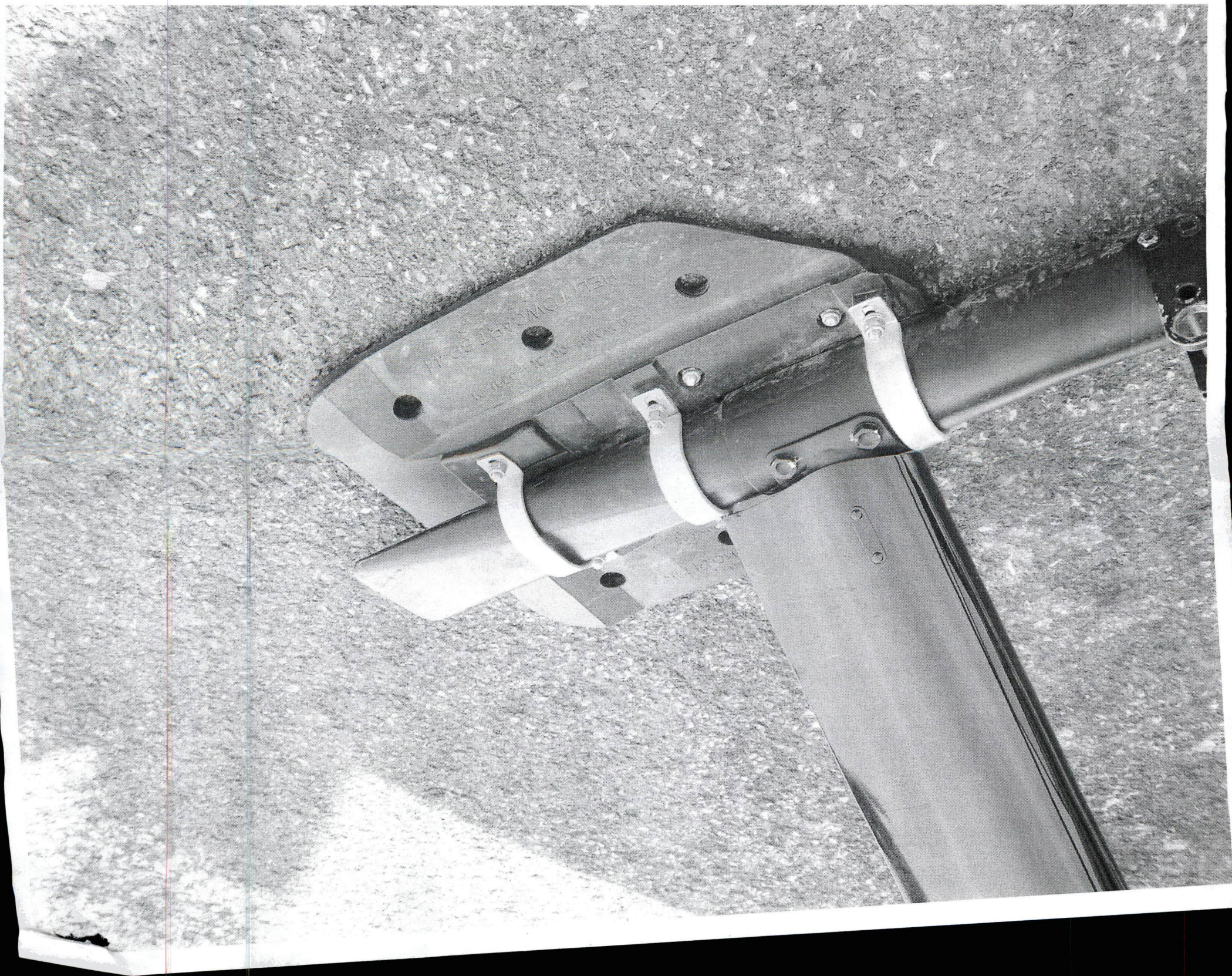
Annex B

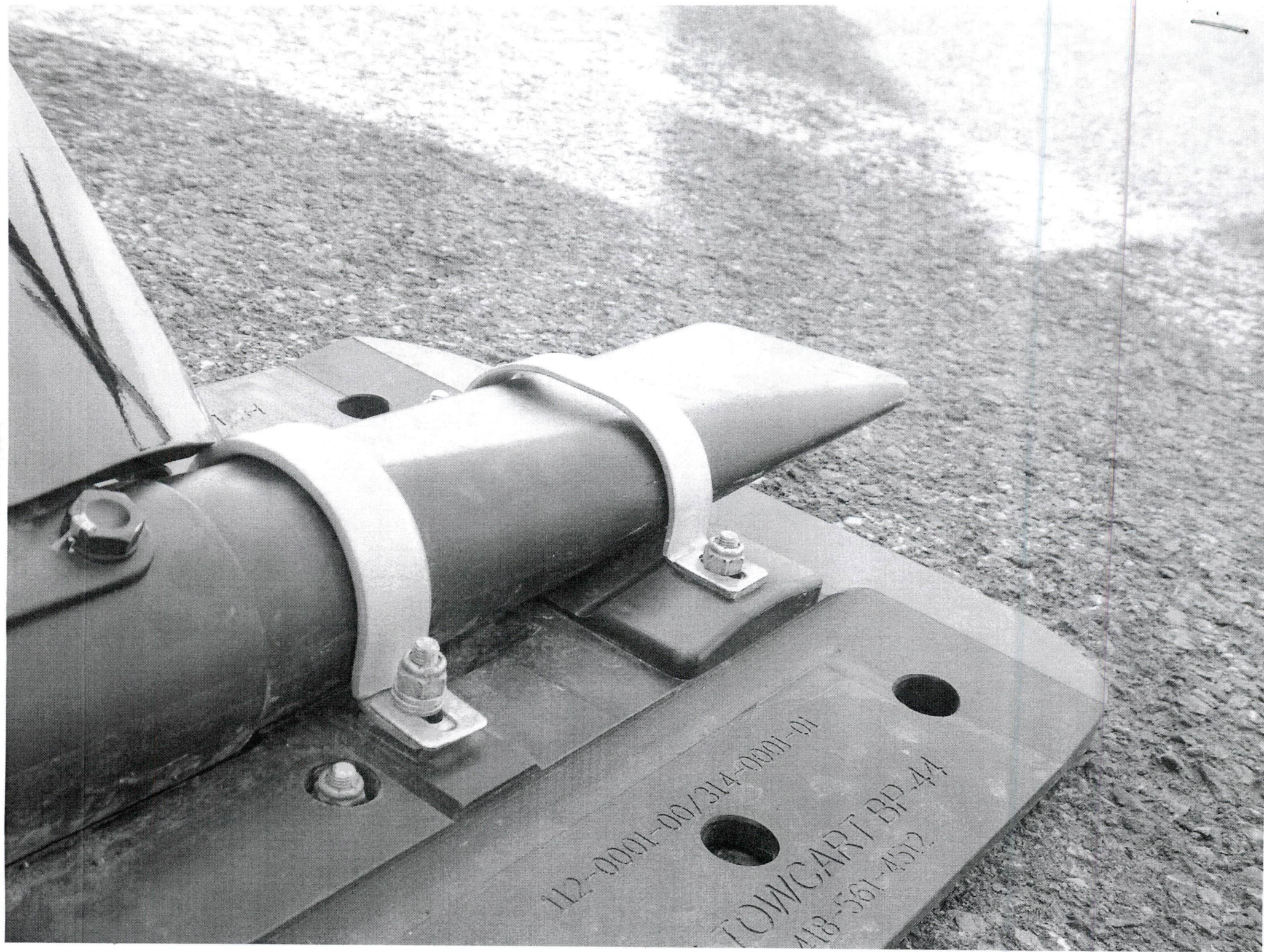
BearPaw Pad Allowable Damage Drawing, Drawing no. 314-0001-01-A (VNR088), Page 2 of 2
BearPaw Streamline Allowable Damage Drawing, Drawing no. 314-0001-01-B, Page 3 of 3

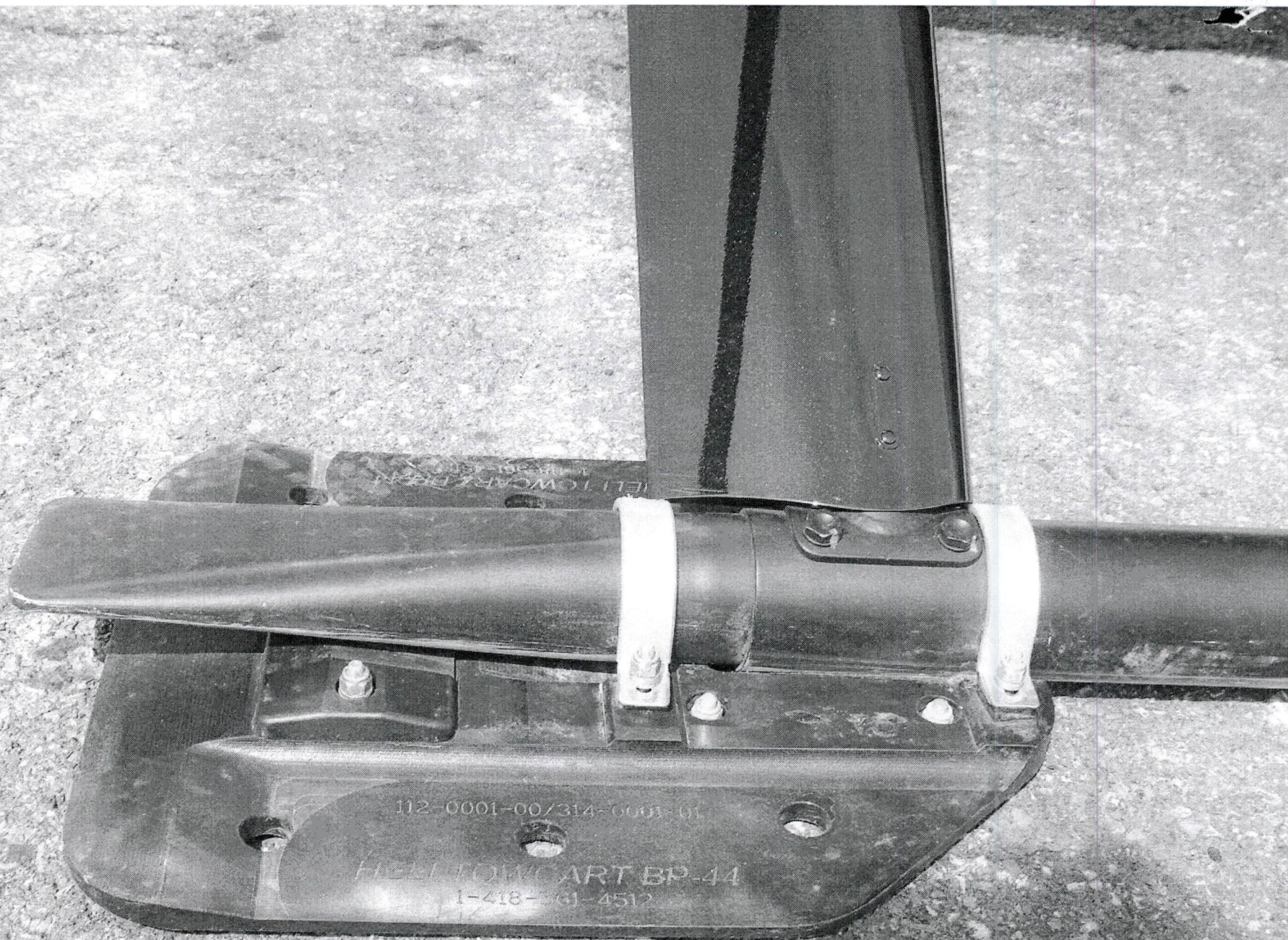
? Rear filler block ?









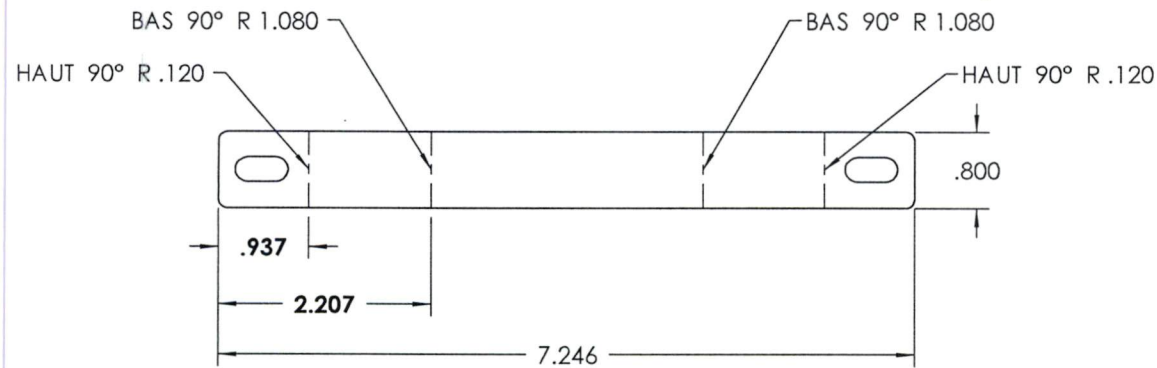


112-0001-00/314-0001-01

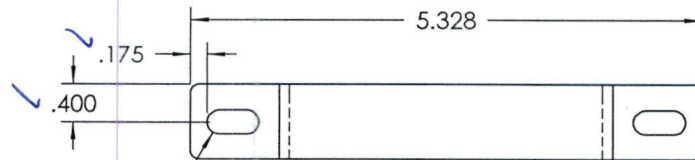
HELI TOWCART BP-44

1-418-361-4512

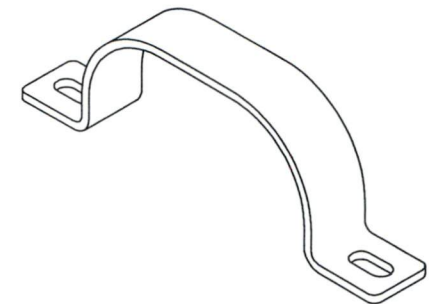
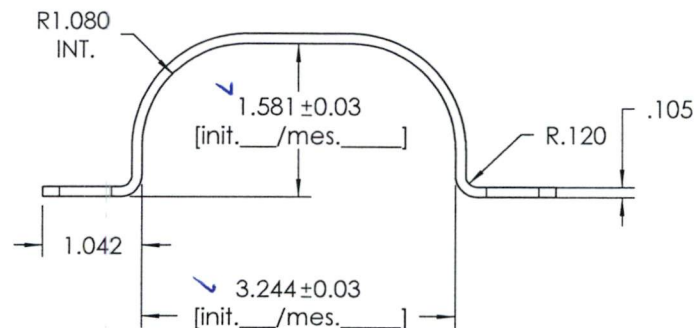
NO.	MATÉRIEL	ÉPAISSEUR	QTE / TOT.
1	SS 304 2B	0.105	36



****Arrondir toute les arretes
au rayon 1/64" tout le tour et
remplir la feuille d'inspection
du client****



✓ $\varnothing .258 \pm .007 \times .547$ lg



[Signature] 2010.4.23

 CÔTÉ INOX	TOLÉRANCE (SI NON SPÉCIFIÉES) X.X = ±0.100" X.XX = ±0.010" X.XXX = ±0.005" FRACTION = ±1/32" ANGLE = ±1°	CE DESSIN EST LA PROPRIÉTÉ DE CÔTÉ INOX TOUS DROITS RÉSERVÉS		RESPONSABLE: S.C.	CLIENT: HELI TOW CART	TYPE DE DÉCOUPE: LASER	
		THIS DRAWING IS THE PROPERTY OF CÔTÉ INOX ALL RIGHTS RESERVED		DESSINÉ PAR: S.P.	PROJET: 10-0552-01	DESSIN NO: 314-0023-15A_rev2	REV: 2
			VÉRIFIÉ PAR:	NOM PIÈCE / ASSEMBLAGE: LOW U SHAPED		ECHELLE: 1:2	DATE: 2010-02-23 Page 1 de 2

Nathalie Barbeau

From: Sebastien Corriveau [scorriveau@coteinox.com]
Sent: March 18, 2010 12:42 PM
To: Nathalie Barbeau
Subject: RE: Helitowcart: Les modifs au LOW U CLIP pour Bearpaw 44
Attachments: 314-0023-15A_rev2 - Feui.pdf

Bonjour Nathalie,

encore moi, je t'envois le dessin révisé

check ça et revient moi la-dessus, meme chose

pour cette piece, changer dans le rapport d'inspection

pour arrondir toutes les arretes au rayon 1/64" environ.

merci et bonne journée

De : Nathalie Barbeau [mailto:nbarbeau@helitowcart.com]
Envoyé : 17 mars 2010 15:19
À : Sebastien Corriveau
Objet : Helitowcart: Les modifs au LOW U CLIP pour Bearpaw 44

Allo Sébastien,

Voici les modifications que j'aurai besoin sur le LOW U Clip que vous nous avez fait la semaine dernière. On a en fait besoin qu'il soit fait selon les mêmes parametres que celui régulier (314 0006 15), mais sa seule différence est au niveau de la profondeur et de la forme aplatie du U.
(Donc même matériel, épaisseur, largeur, slots, fini des rebords, etc).

Je compte possiblement faire produire à nouveau ces LOW U Clip très prochainement.
Si on met à jour le dessin maintenant, on pourra vous donner le ok plus vite.
On rencontre la firme d'ingénieur ce vendredi pour régler cela au niveau réglementaire.

Trouve donc ci-joint le dessin que j'ai annoté le mieux que je pouvais et aussi un dessin d'ensemble pour que tu vois à quel endroit on met les U clips réguliers (les plus arrondis) et les nouveau U clips LOW que nous voulons mettre à l'arrière du bearpaw. Des bearpaws sont en fait des raquettes d'hélico (si cela peut t'aider).

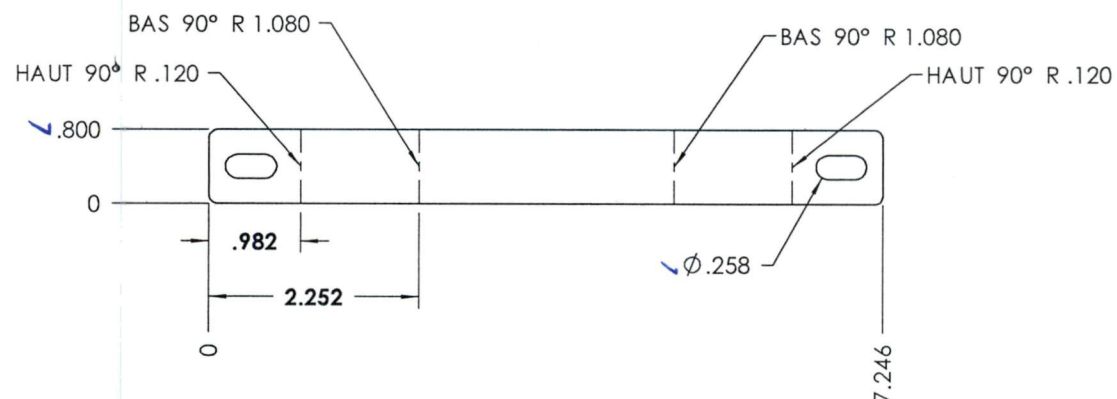
Merci!

Nathalie Barbeau
VP Commercial Affairs

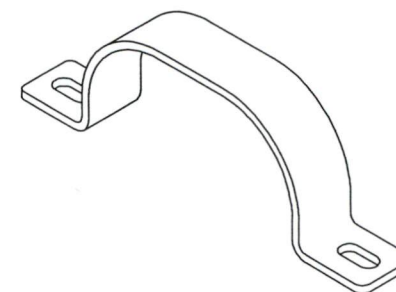
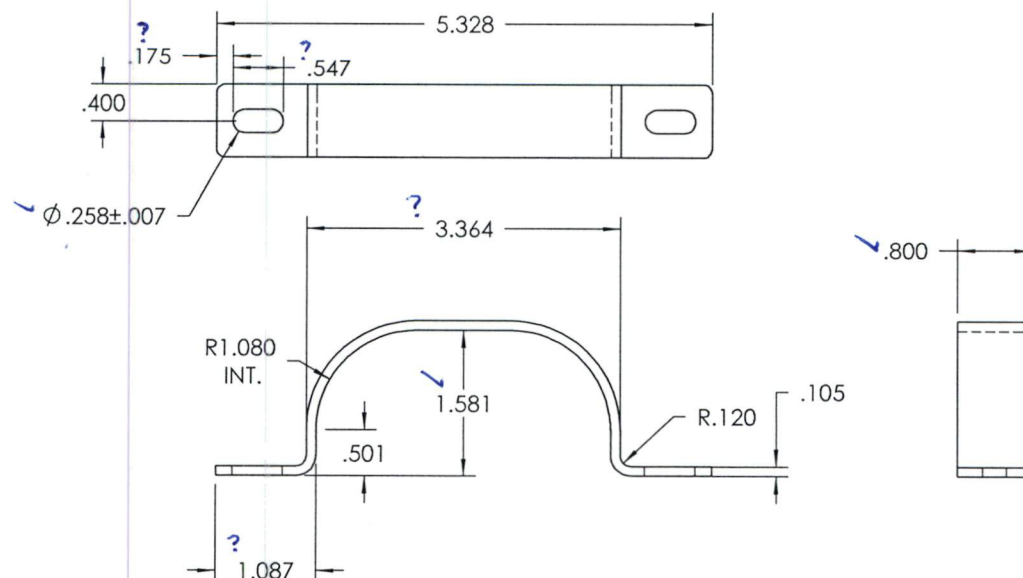
Helitowcart (Vanair inc.)
877A Alphonse-Desrochers
St-Nicolas, Levis,
Quebec, Canada, G7A 5K6
main tel: +1 418 561 4512
plant tel: +1 418 836 4525
plant fax: +1 418 836 4575
nbarbeau@helitowcart.com
info@helitowcart.com
www.helitowcart.com

19/03/2010

NO.	MATÉRIEL	ÉPAISSEUR	QTE / TOT.
1	SS 304 2B	0.105	36



****Arrondir toute les
arretes au rayon 1/64"
environ tout le tour****



TOLÉRANCE
(SI NON SPÉCIFIÉES)

X.X = $\pm 0.100"$
X.XX = $\pm 0.010"$
X.XXX = $\pm 0.005"$
FRACTION = $\pm 1/32"$
ANGLE = $\pm 1^\circ$

CE DESSIN EST LA
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TOUS DROITS RÉSERVÉS

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RESPONSABLE:

S.C.

DESSINÉ PAR:

S.P.

VÉRIFIÉ PAR:

CLIENT:

HELI TOW CART

PROJET:

10-0552-01

NOM PIÈCE / ASSEMBLAGE:

LOW U SHAPED

TYPE DE DÉCOUPE:
LASER

DESSIN NO:

314-0023-15A_rev2

REV:

2

ECHELLE:

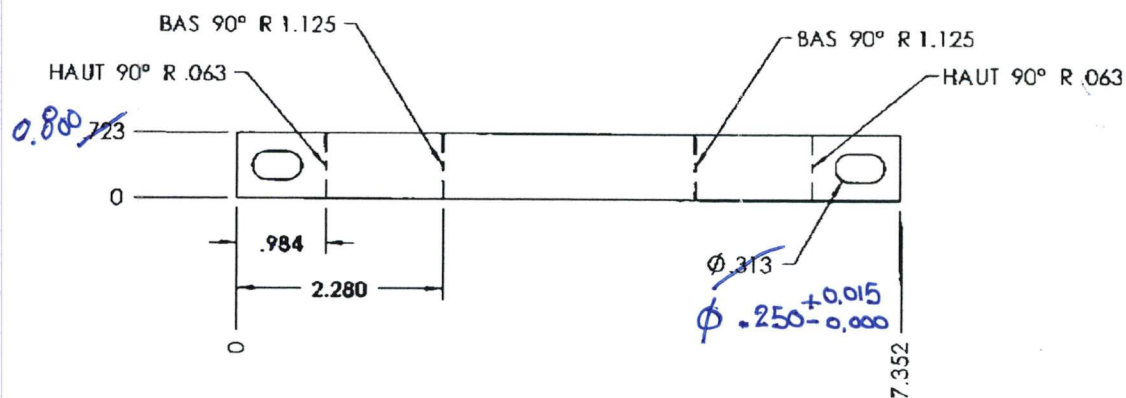
1:2

DATE:

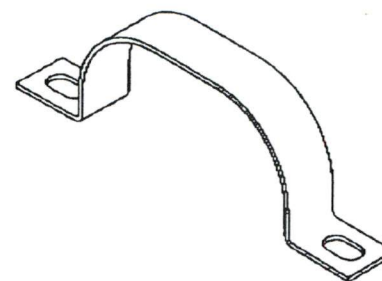
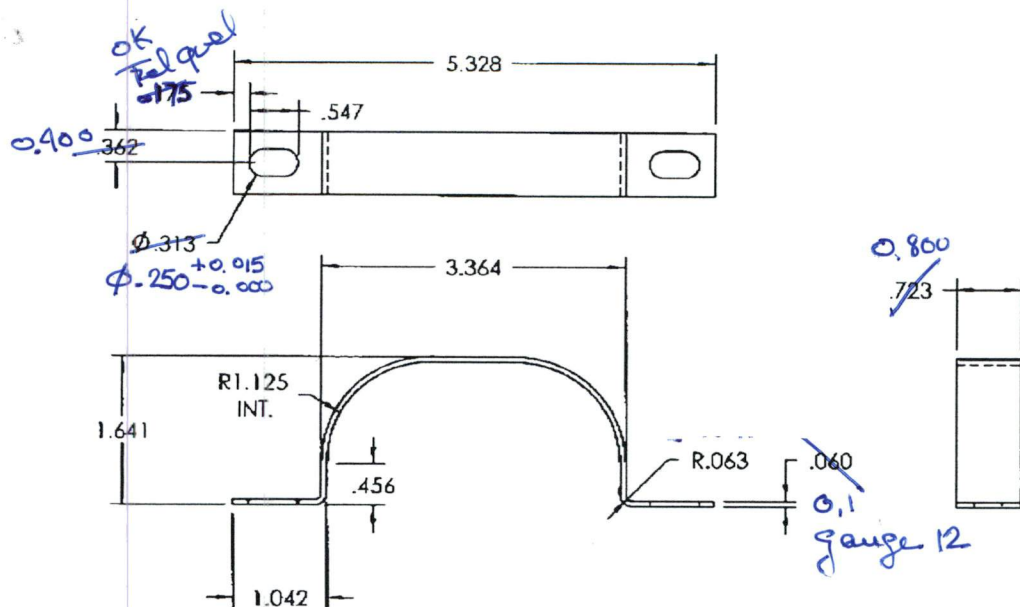
2010-02-23

Page 1 de 2

NO.	MATÉRIEL	ÉPAISSEUR	QTE / TOT.
1	SS 304 2B	0.060	36



A/s Nathalie

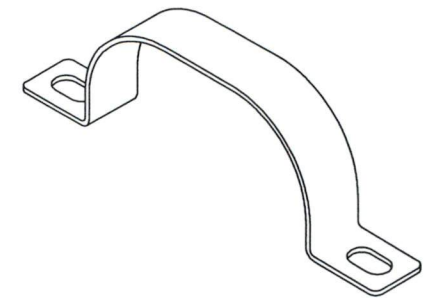
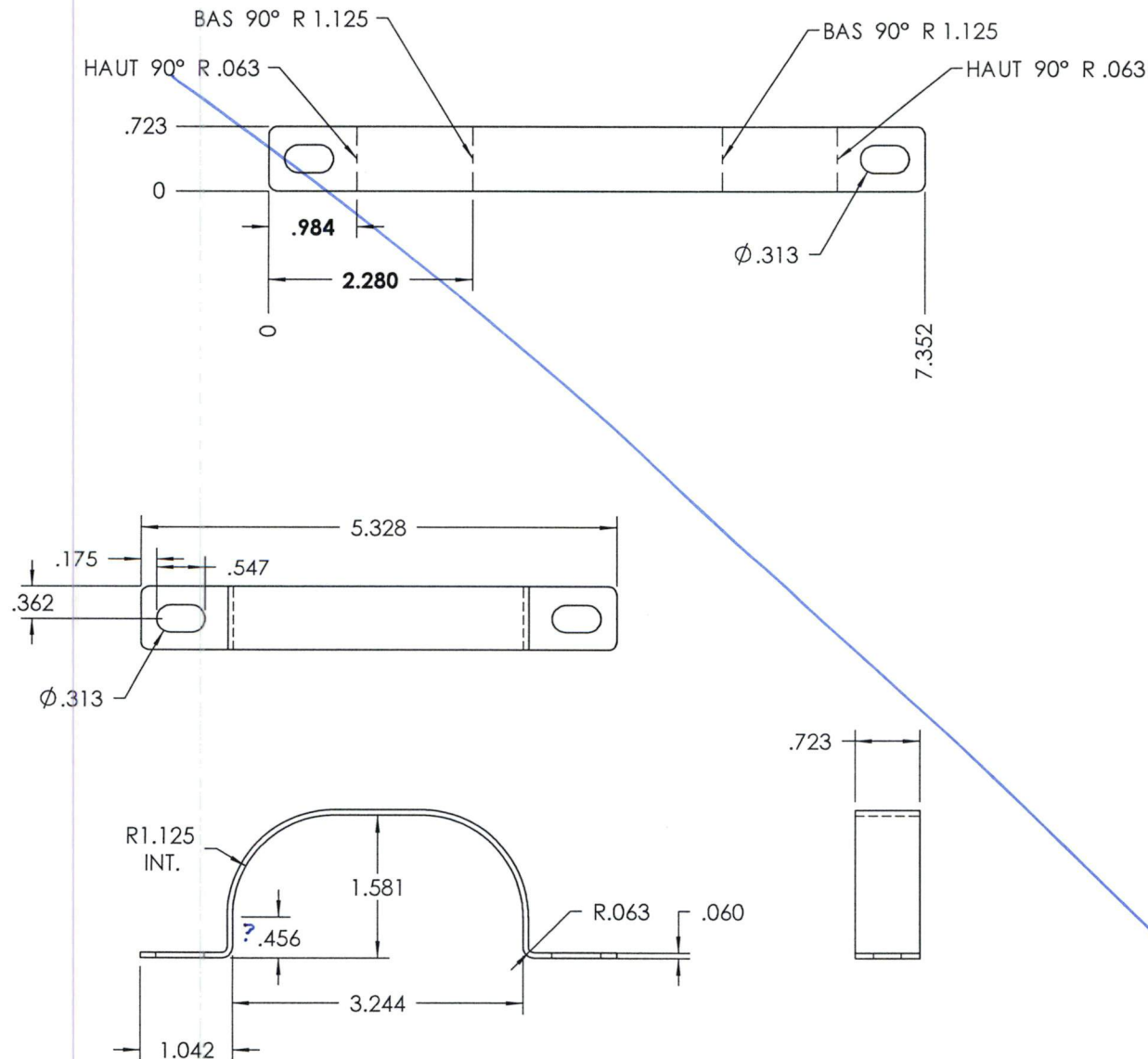


RAW MATERIAL SPECIFICATION:
STAINLESS STEEL 304 ANNEALED
SHEET GAGE 12

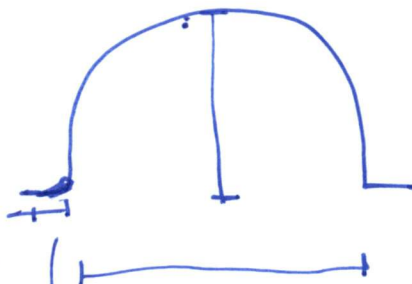
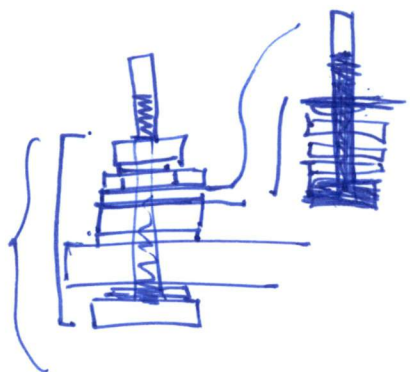
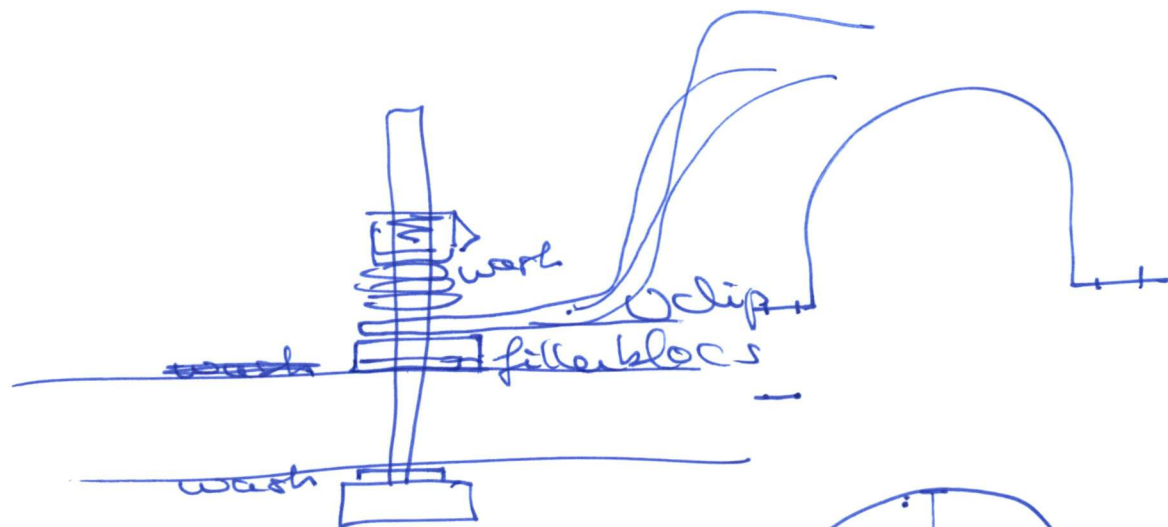
	TOLÉRANCE (SI NON SPÉCIFIÉES) X.X = ±0.100" X.XX = ±0.010" X.XXX = ±0.005" FRACTION = 1/32 ANGLE = 1°	CE DESSIN EST LA PROPRIÉTÉ DE CÔTÉ INOX TOUS DROITS RÉSERVÉS	RESPONSABLE S.C.	CLIENT: HELI TOW CART	TYPE DE DÉCOUPE LASER			
		THIS DRAWING IS THE PROPERTY OF CÔTÉ INOX ALL RIGHTS RESERVED	DESSINÉ PAR: S.P.	PROJET: 10-0552-01	DESSIN NO: 314-0023-15A B		REV: 2	
			VÉRIFIÉ PAR:	NOM PIÈCE / ASSEMBLAGE: LOW U SHAPED	ECHELLE: 1:2		DATE: 2010-02-23	Page 1 de 2

ANNOTATIONS PAR N. BARBEAU / 2010.03.16

NO.	MATÉRIEL	ÉPAISSEUR	QTE / TOT.
1	SS 304 2B	0.060	36



 CÔTÉ INOX	TOLÉRANCE (SI NON SPÉCIFIÉES) X.X = ±0.100" X.XX = ±0.010" X.XXX = ±0.005" FRACTION = ±1/32" ANGLE = ±1°	CE DESSIN EST LA PROPRIÉTÉ DE CÔTÉ INOX TOUS DROITS RÉSERVÉS	RESPONSABLE: S.C.	CLIENT: HELI TOW CART	TYPE DE DÉCOUPE: LASER		
		THIS DRAWING IS THE PROPERTY OF CÔTÉ INOX ALL RIGHTS RESERVED	DESSINÉ PAR: S.P.	PROJET: 10-0552-01	DESSIN NO: 314-0023-15A		REV: /
			VÉRIFIÉ PAR:	NOM PIÈCE / ASSEMBLAGE: LOW U SHAPED	ECHELLE: 1:2	DATE: 2010-02-23	Page 1 de 2



① si U plus profond
 besoin de moins de filles
 donc bout de vis sort plus.
 et là ils mettent du washer !?
 pour remplir le dessus de vis
 et qu'il reste moins de filets
 qui saient au bout ?

April 22, 2010

Object : Helitowcart – Back-Up APU Kit

To whom concerned,

This letter is to confirm how the APU kit offered within our quotation with the Helitowcart is designed to perform.

The Helitowcart model V614 was designed for helicopter ground handling. It was designed with a compact format to be transported into helicopters from base to base (heliport to heliport). This explains why we use small size batteries (Group 40) as we needed them to be as low height as possible for this compact cabinet.

All our tow carts operate with DEEP CYCLE batteries. This is a type of battery that is designed to withstand extended output of power in low doses. It is equipped with thick lead plates in order to provide a long range operation. This battery type should not be used on a constant basis for APU applications. This can damage the batteries. However, they can be used for APU application in case of emergency or occasional need if the operator is on a remote base and absolutely needs the power from the batteries. The batteries are foremost to provide power to the cart. Their main function is not for the APU.

This explains why our tow cart APU kit should only be used for emergency or occasional needs. If used on a regular basis, the batteries will degrade at a very fast rate and will need to be replaced after a very short lifespan.

Since we use 12 volts batteries, we can obtain a maximum of 24v output by linking the batteries together. In practice each of these batteries offers a bit more voltage above the 24v mark when fully charged. It is actually in this full charge battery condition that the batteries can offer up to 26volts if they are in top shape condition.

We have tested our system with an AW139 and with a B412. In both cases we have easily contributed to starting the helicopters. We ~~confirm~~ ^{estimate} that we can get 1000amps for up to 10 seconds from the battery pack but again, this should not be done on a regular basis.

We hope this information meets your needs,

Kind Regards,

batteries will be heavily
discharged

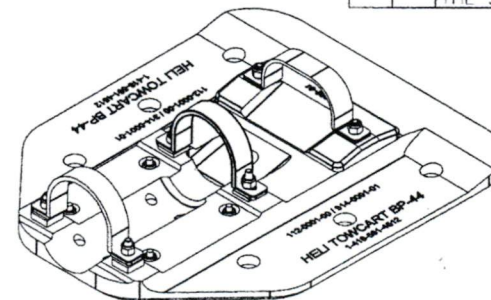
Nathalie Barbeau
VP Commercial Affairs
Helitowcart

Bruno Martel
VP Engineering & IT
Helitowcart

NOTE:

1. ICEBLADE ASSEMBLY CAN BE OMITTED FROM INSTALLATION (OPTIONAL)

2. FASTENERS LENGTH TO BE DETERMINED AT THE INSTALLATION



ISO
SCALE 1 / 4

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SIZE
15	1	314 0023 15 A	BEARPAW U-SHAPED CLIP REAR	STEEL	
13	3	314 0016 05 A	BEARPAW SHRINK 1X	RUBBER	
12	2	314 0015 01 A	BEARPAW FILLER BLOCK 1/8	UHMA	1/8
11	2	314 0014 01 A	BEARPAW FILLER BLOCK 3/32	UHMA	3/32
10	4	261 0001 17 A	BOLT AN4 15A	STEEL	1/4
9	10	262 0001 17 A	NUT M520 365 4 R	STEEL	1/4
8	2	261 0003 17 A	BOLT AN4 16A	STEEL	1/4
7	6	314 0007 15 B	BEARPAW SLOTTED CLIP S. PORT	STEEL	
6	2	314 0006 15 B	BEARPAW U-SHAPED CLIP	STEEL	
5	2	314 0012 01 A	BEARPAW FILLER BLOCK 1/4	UHMA	1/4
4	2	314 0005 15 A	BEARPAW ICE BLADE ASSEMBLY	STEEL	
3	20	263 0001 17 A	WASHER AN460 41R	STEEL	1/4
2	1	314 0022 01 A	BEARPAW FILLER BLOCK REAR	UHMA	1/2
1	1	314 0001 01 A	BEARPAW -AD	UHMA	

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SIZE
15	1	314 0023 15 A	BEARPAW U-SHAPED CLIP REAR	STEEL	
13	3	314 0016 05 A	BEARPAW SHRINK 1X	RUBBER	
12	2	314 0015 01 A	BEARPAW FILLER BLOCK 1/8	UHMA	1/8
11	2	314 0014 01 A	BEARPAW FILLER BLOCK 3/32	UHMA	3/32
10	4	261 0001 17 A	BOLT AN4 15A	STEEL	1/4
9	10	262 0001 17 A	NUT M520 365 4 R	STEEL	1/4
8	2	261 0003 17 A	BOLT AN4 16A	STEEL	1/4
7	6	314 0007 15 B	BEARPAW SLOTTED CLIP S. PORT	STEEL	
6	2	314 0006 15 B	BEARPAW U-SHAPED CLIP	STEEL	
5	2	314 0012 01 A	BEARPAW FILLER BLOCK 1/4	UHMA	1/4
4	2	314 0005 15 A	BEARPAW ICE BLADE ASSEMBLY	STEEL	
3	20	263 0001 17 A	WASHER AN460 41R	STEEL	1/4
2	1	314 0022 01 A	BEARPAW FILLER BLOCK REAR	UHMA	1/2
1	1	314 0001 01 A	BEARPAW -AD	UHMA	

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N. Barbeau
2010.04.24

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